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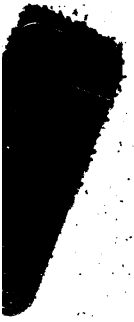

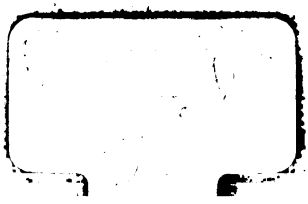

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CALIFORNIA
OF THE SOUTH

Its Physical Geography, Climate, Resources, Routes of Travel, and Health-Resorts

BEING A COMPLETE GUIDE-BOOK
TO SOUTHERN CALIFORNIA

BY
WALTER LINDLEY, M. D., AND J. P. WIDNEY, A. M., M. D.

WITH MAPS AND NUMEROUS ILLUSTRATIONS

NEW YORK
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1888

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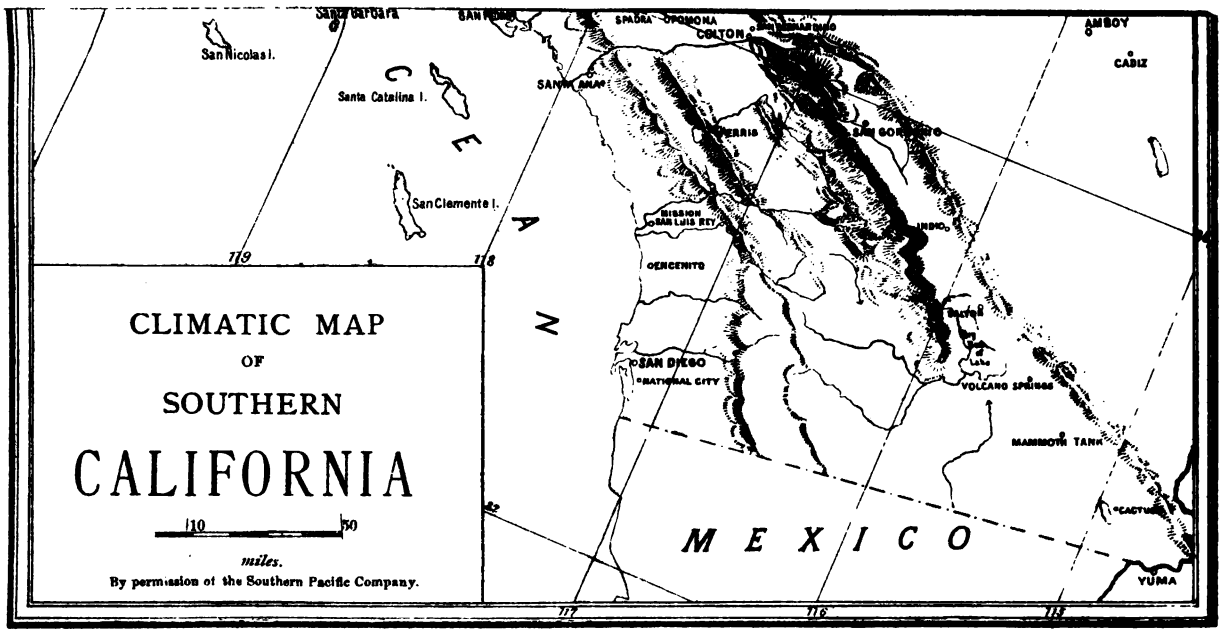


MEAN ANNUAL TEMPERATURE.

BROWN	PINK	YELLOW	GREEN	WHITE
68° TO 78°	60° TO 68°	52° TO 60°	44° TO 52°	30° TO 44°

PART I.

CLIMATOLOGY OF THE PACIFIC COAST.

By J. P. WIDNEY, A.M., M.D.

Two Californias.

The American east of the Rocky Mountains has been accustomed to look upon the map and speak of the State of California as he would speak of the State of Ohio or New York. He is only beginning to find out, what the old Spaniard discovered long ago, that where he had spoken of one, there are two, a California of the North and a California of the South, and that these two, while possessing many features in common, are in many others totally unlike.

And with the settling up of the country, and the knowledge which comes of time and climatic investigation, these differences are found to be even more marked than at first supposed.

So unlike are the California of the North and the California of the South that already two distinct peoples are growing up, and the time is rapidly drawing near when the separation which the working of natural laws is making in the people must become a separation of civil laws as well, and two Californias stand side by side as distinct and separate States.

To a clear understanding of the differences which exist between the Californias and the eastern portion of the United States, and again of the differences between the two Californias when contrasted the one with the other, it is necessary to examine into the geographical, topographical, and climatic features which they possess in common as contrasted with the eastern shores of the continent, and again the features wherein they differ the one from the other.

The Pacific Coast of America as contrasted with the Atlantic Coast.

The Atlantic and Pacific coasts of the United States alike have a general trend, diverging as they go northward, from the axis of the continent. This is caused by the widening out of the land as it passes northward from the Isthmus. This trend gives to each coast a general southerly exposure to the sea, the one facing toward the southeast, the other toward the southwest. North of the boundary-line of the United States this similarity ceases. Upon the Atlantic side the shore-line retreats toward the west, north of Newfoundland, which projects like a great headland out into the ocean. In consequence of this recession of the land, the shore has here a northeasterly instead of a southeasterly exposure. Along the line of this shore the broad, deep channel of Davis Strait opens a great, unobstructed way from the waters of the Atlantic to the Arctic Seas.

Upon the Pacific side, instead of the falling back of the shore line, the divergence from the central axis increases until, at Alaska, the land faces boldly off toward the south. Instead, also, of a clear channel into the polar seas, that body of cold water is practically shut off, the narrow and shallow passage of Behring Strait admitting of only a slight communication, while another barrier in the shape of

the long transverse line of the Aleutian Peninsula and its continuing islands makes a wall between the colder waters of the north and the warmer waters of the ocean south.

In the mountain-chains, also, a similarity and again a difference may be noted. Upon each coast in the southern portion a system of mountain-chains follows the shore-line at a greater or less distance inland. Upon the Atlantic side this system, the Appalachian, begins in Northern Georgia, and extends continuously through the Carolinas, Virginia, and Pennsylvania, finally disappearing in Northern Maine. It runs parallel to the coast, and at a distance of from two to three hundred miles inland. South of this line the land ceases, and the great heated body of the Gulf waters extends across the southern border of the continent, sending its modifying influence, borne by the Gulf winds, far inland along the open valley-way of the Mississippi. North of Central New York the chain begins to break down, leaving the country open upon the north and west to the cold winds which sweep down from the polar seas, and from the great frozen plains which extend to the mouth of the Mackenzie. The northwesterly winds gather an increased harshness from the winter-chilled waters of the Great Lakes, across which they pass.

This Appalachian system is made up of mountains of limited altitude, ranging only from two to three thousand feet in height, and broken by numerous passes and low reaches.

Between these mountains and the sea lies a coast-plain, broad, continuous, fertile, watered by many rivers, and broken by no transverse range of mountains.

Upon the Pacific coast, likewise, is a system of mountains running parallel with the coast, but much closer to it than the Appalachian upon the east. This Pacific coast system is made up of the Sierra Nevada, which in different portions of its length is known by various local names, and

the Coast Range. This system, unlike its analogue upon the Atlantic coast, is not shortened upon either the north or the south. Beginning at the southern point of the Peninsula of Lower California, in the latitude of Cuba, it follows the coast as a double range, the outer keeping near the shore, the inner at a distance of from one to three hundred miles; sometimes the Coast Range disappearing, again reappearing—the Sierra, however, always continuing as a practically unbroken chain; sometimes the two ranges coalescing, sometimes separating and inclosing between their two walls long, comparatively narrow valleys, which drain to the sea by breaks in the outer range; sometimes the outer range disappearing entirely for a space, leaving these valleys open to the sea as great coast-plains.

The Coast Range has generally a narrow rim of plain at its base, cut transversely by numerous small streams and rivers which quickly reach the sea. This system of mountains extends as a continuous line from the Peninsula of Lower California through California, Oregon, Washington, British Columbia, and Alaska, finally turning directly westward out the long Aleutian Peninsula.

Pouring out of the Arctic Ocean through Baffin's Bay is a great polar current of cold water, with a temperature but little above the freezing-point, chilling, by its contiguity, the open plains of Labrador, and thus lowering the mean annual temperature of the Northern Atlantic States and of Canada, which lie open to the winds sweeping southward from these colder regions. No range of mountains intervenes to break the force of these air-currents, or to give shelter, the whole Atlantic slope north to the polar seas being practically one continuous open plain. South of Labrador the polar current is shot off to the mid-Atlantic by the prominent headland of Newfoundland, excepting, however, such smaller portion of it as may pass within that island by the Strait of Belle Isle and down by the Nova Scotian coast.

The south end of the Atlantic plain has, on the contrary, its shore-line constantly bathed in a current of warm water having a temperature of 86°, which comes from the heated tropic seas, and then circling through the Caribbean Sea and the Gulf of Mexico, emerges by the Strait of Florida and is deflected northward along the coast of the United States by the reefs and islands of the Bahamas. From these heated waters flow inland the warm, moist air-currents which give to the South Atlantic coast its sultry heat. Yet this ocean-stream, also, after a while, leaves the vicinity of the land, and passes seaward to the mid-Atlantic and on to the North European coast, in part carried by the line of its escape from the Gulf, in part deflected by the curve of the Florida coast, and by the projecting capes of the Carolinas.

Between these two deflected currents, the Gulf and the polar, is a triangle, having for its base the shore-line from Cape Hatteras, in the Carolinas, to Cape Race, on the extremity of Newfoundland, and extending far seaward, the temperature of whose waters, controlled by no great ocean-current, varies with the seasons—colder in winter, warmer in summer—and so serving less efficiently as an equalizer of temperature on the adjacent land.* Neither is there found upon the Atlantic coast the strong sea-breeze or the on-shore trade-wind currents of the Pacific coast. As a result of these geographical features, the climate of the Atlantic coast presents great and well-marked variations, the North showing extremes of cold in winter, the South ex-

* The following table shows the winter and summer variations of sea temperature upon the Atlantic coast as compared with the Pacific:

	January.	July.		January.	July.
New York.....	33·3°	72·4°	San Francisco.....	52·1°	59·0°
Savannah.....	49·9°	84·5°	Long Beach.....	60·0°	68·5°

tremes of heat in summer, and this, too, with an atmosphere heavily charged with moisture—not simply within reach of the coast fog, but extending inland to the valley of the Mississippi.

The points of resemblance between the two coasts now begin to cease, for, while the Pacific shore has also its ocean-current, it is one, rather than two, and it flows along the full length of the coast, with a temperature varying but little from the one even and moderate degree, whether winter or summer, or whether north or south. The Kuro Siwo, as it is termed—the great Japan current—flows from the tropics northward along the Asiatic coast, bathing the Japan Islands in its warm waters, and giving to them their mild and equable climate. Passing on northward it is deflected toward the east in latitude 50° by the long chain of the Aleutian Islands, and then, striking the Alaskan coast, turns south, and so follows down the west shore of North America as a current, cooled yet not cold, for, instead of entering the Polar Sea, it is still, at the most northerly point of its flow, within the temperate zone. Neither does any cold polar current set out through the narrow and shoal Behring Strait to join it and reduce its temperature below the refreshing coolness which it gains in latitude 50° north. It is this current, together with the all-the-year on-shore winds of the counter-trades on the coast as far south as Oregon, and the strong daily sea-breeze of the summer and the on-shore counter-trades of the winter, south of Oregon, which give the clew to the equable climate of the Pacific coast of North America.

Passing inland beyond the range of the sea-breeze, this cool summer temperature is no longer found. On the contrary, the mercury will often show a heat in the day of 100° to 110°. Yet here another climatic law comes in play to rob this high temperature of its danger, and, indeed, of much of its discomfort.

The hygrometer shows an atmosphere in these inland regions almost devoid of moisture, and, by the consequent rapid surface evaporation from the skin, bodily temperature is reduced and sunstroke almost unknown. Of the power of this evaporation to keep down bodily temperature, the writer has a vivid recollection during some weeks spent in Tucson, Arizona, some years ago. Just before the setting in of the summer rains, with the mercury daily at 100° and the atmosphere devoid of moisture, the surface of the body was dry, and the heat not in the least oppressive. Immediately upon the coming on of the rains, the daily temperature fell to an average of from 85° to 90°, but with an atmosphere laden with moisture, and the surface of the body was constantly bathed in the unevaporating perspiration, and the heat became almost unendurable. It is this absence of atmospheric moisture and its effects which make one of the great points of difference between the summer climates of the Atlantic and the Pacific slopes.

The explanation of this atmospheric dryness back of the immediate California coast-line, and on to the interior during the summer, lies in the fact that south of Oregon the prevailing summer wind, except within the limited shore-line reached by the sea-breeze, is not from the sea, but is the regular off-shore trade-wind, coming from the great arid desert plateaus of the heart of the continent, and which, as it nears the coast, rises above the lower surface-current of the daily ocean-breeze, and flows continuously out to sea, until broken in the autumn, and beaten back by the shifting southward of the counter-trades.

Another important factor in the dissipation of excessive heat during the summer is the rapid radiation of the night which the atmospheric dryness admits of, and which, in the more elevated regions whence the night-wind comes, is increased by the lightness and rarefaction of an atmosphere with less superincumbent weight upon it. Under the work-

ings of this law, upon these desert plateaus the day, with a temperature of 100° to 110°, is followed by night with a temperature so low as to require blankets for comfort and health.

The influence of the mountains in a comparison of the climate of the two coasts is an important item. Dwellers along the slopes or near the base of high mountain-peaks know the cool night-breezes which blow down their sides. The writer well remembers the rush of the great cold mountain wind which swept down the cañons of the Arizona mountains in many a lone night-camp under the trees, the wind roaring through the long night hours in the pines overhead like the roar of some long-lost desert sea. The Atlantic coast, as already shown, has its mountain system back several hundred miles from the sea; but the mountains are of low elevation, ranging only from two to three thousand feet in height. The Pacific coast, however, is lined with ranges and spur-ranges whose peaks lift to elevations of from five to ten thousand feet, and snow-clad until the summer is well gone by. From these cold, snowy summits at night comes to the heated valleys below a continuous current, partly the natural mountain wind, partly the dropping down of the high trade-wind already mentioned, cooled by its passage over these great elevations, and hence the cool, refreshing nights which characterize the Pacific coast summers, as contrasted with the continuous day and night heat of the Atlantic slope.

Seasons.

The old division of the year into winter and summer, with which the Anglo-Teuton race has been familiar during the thousands of years of its migrations, becomes upon the Pacific coast a misnomer, or the words must be taken in a new signification. The snows and the ice of its older homes

become here the rains and the occasional light frosts of a climate in which winter and summer are supplanted by a wet and dry season. As already shown, the northeast trade-wind, which is the prevailing wind for the summer half of the year upon the whole coast south of Oregon, is an off-shore dry wind, coming from the high, arid plateaus of the heart of the continent. With it comes no rain. But as the sun retires southward in the autumn, this dry wind follows it, and the northwest counter-trade of the upper coast, which is an on-shore rain-wind, and which, as the prevailing wind all the year round on the Oregon and Alaskan coast, gives to it the monthly rains, also follows the sun, and now takes the place of the dry trades upon the coast as far south as well down the Peninsula of Lower California, bringing with it the rains which, from October to May, make of the winter of other lands the true summer or season of growth in this. Then, when the rains are over, come the summer months of other lands, but which here are the season when vegetation sleeps, and the land, where not irrigated, looks dry and bare.

A mistaken idea prevails often with persons who have formed their conceptions of a rainy season from the descriptions given by travelers in equatorial regions of the tropic rains, with their daily down-pour and their appalling thunder and lightning. The rainfall of the Pacific coast, while in its northern portion in excess, and in the extreme south less than that of corresponding latitudes upon the eastern side of the continent, averages throughout Oregon and California much as in the Atlantic and Mississippi States.

Neither are the rainy months marked by violent and heavy rainfalls. From the middle of October to the middle of November the first rain of the season generally falls, giving in the course of two or three days from one to three inches. Then, after several weeks of clear weather, comes

rain again in the same manner. In the latter part of December what is called one of the heavy winter storms sets in, when, during a week or ten days of south winds and broken, rainy weather, a fall of from five to eight inches may be expected. January is generally marked by clear weather, with possibly occasional slight rains. In February or March another of the heavy storms may again be expected. Then the rains gradually grow less, until by May they have almost ceased.

The rains of the plains and valleys are accompanied by snows in the mountains, snow accumulating to a depth of many feet in the high Sierra, and to a less depth in the lower Coast Ranges. This snow forms the great storehouse of moisture for the summer streams, slowly melting and filling the various rivers during the rainless summer. Thunder and lightning are almost unknown. During the summer what is known as the Sonora summer rain-current occasionally follows up the long chain of the Sierra, giving showers, with thunder and lightning, in the mountains, and at intervals of a few years even in the valleys. This current may at times last for a week, and during its continuance the weather becomes somewhat sultry, like that of the Atlantic States, but with the sea-breeze, although for the time blowing with less force, to modify and temper it.

The summer along the whole sea-coast is marked by night-fogs, which set in after the spring rains check, and cease before the rains of the autumn begin. These fogs lift in the early forenoon, and by their humidity and freshness help to make the day cool and refreshing. The heat of the summer is not felt along the coast within reach of the sea-breeze—a midday temperature of from 65° to 80° being the rule, varying with localities. Back from the coast, in the interior valleys, where the fog does not penetrate, the midday temperature may, in exceptional cases,

during a hot spell, reach 90° or 100°, or even 105°, but it is a dry heat, without the discomfort or the danger attending a like temperature in the Atlantic or Mississippi States. These hot spells, as they are called, may occur several times during the course of the summer, generally lasting for three days, when the mercury drops, and the normal coolness returns. Even during these hot spells, however, the night is generally marked by a rapid fall in temperature, so that sleep is restful and refreshing.

While the summer is marked by the regularity of the daily sea and land breezes, the cyclones and great windstorms of the Atlantic and Mississippi regions are here unknown.

Another and very marked feature of the Pacific slope, as contrasted with the Atlantic, is the great variety of climates found within comparatively limited areas. This variety arises largely from the difference in the mountain development upon the two sides of the continent. Upon the Atlantic slope, as already described, the one system follows parallel with the coast, but at a distance of several hundred miles inland, and is of moderate elevation, ranging only from two to three thousand feet, while no spur-ranges reach out to the coast, and no coast-range rises between the broad coast-plain and the sea. Upon the Pacific slope the main chain of the high Sierra also follows parallel with the coast, at a distance somewhat less, however, ranging from sixty to two hundred miles from it. But instead of an elevation of only two or three thousand feet, it rises to from eight to fourteen thousand feet above the sea. Again, instead of the open coast-plain, as upon the Atlantic side, comes a second line of mountains, the Coast Range, parallel with the coast, and close to it. These two ranges, also, at several points in their long line coalesce, and merge into great, broken, upland mountain-plateaus and Alpine regions. The resulting difference in the cli-

mate of the two coasts is very marked. While upon the Atlantic side the sufferer from the summer heat, or the invalid, must undertake a journey of many hundred miles to find even a moderately cool mountain air, upon the Pacific coast, if a resident of the warmer interior valleys, and not desiring to seek the sea-side, within his sight are mountains where he may find any temperature ranging from refreshing coolness to night-frosts or perpetual snows. So, too, in the Coast Range, are varieties of climates such as one would seek in vain upon the Atlantic slope. While upon the ocean-side of the range are great forests where the giant redwood is bathed nightly in the dense, cool fog which seems to be essential to its growth, just across the summit are warm mountain-slopes facing off toward the morning sun, their rolling hills green to the very crest with the olive and the vine; and yet from their sheltered warmth one may pass on for a few miles to some pass or gap in the range that is swept during all the summer months by the great, cool ocean-wind as it rushes through to the heated interior.

Thus, there is scarcely a point in California where one within a few hours by rail has not his choice of a climate, varying from the heat of the Atlantic or Mississippi midsummer to the coolness of the White Mountains, or the perpetual snows of the higher Alps; his choice from a hot, dry air, as of the highlands of Arabia, to fogs and coolness, as of the west coast of Scotland; his choice from a stillness, as of the calm of the "hollow lotus-land," where no harsh winds blow, to other points swept by ocean-winds which for months pour inland with the rush and the roar of a great aërial river. It is this infinite variety, lying back of the typical equability, which gives to the Pacific slope climate its strongest charm, and which makes it suit so infinite a variety of constitutions and diseases.

Topographical and Climatic Features in which the Different Portions of the Pacific Coast are unlike.

A stranger might infer, from the foregoing, that one common climate, with little variation, existed over the whole Pacific coast. This is not the case, however. Upon the coast-line three distinct types exist, while a fourth is found back of the Sierra on the great inland plain. And these climatic differences are sufficient to make radical differences in agriculture, in commercial laws, in civil divisions, in health and disease, and in race development.

These climatic belts may be classified into—

1. The northern, which includes the upper coast from the great transverse coalescing of mountains near the upper line of California northward. In this division lie Oregon, Washington, British Columbia, and the immediate coast-rim of Alaska, and the long chain of islands which lines the coast.

2. The central, which includes California as far south as the eastward turn of the coast at Point Conception. Near this point transverse chains of high mountains separate the State into two distinct topographical and climatic divisions.

3. The southern, which embraces what is distinctively known as Southern California, and includes that portion of the State lying south of the transverse chains of mountains just mentioned.

4. The great inland plateau, lying between the Sierra Nevada and the Rocky ranges, and reaching from the Gulf of California on the south to the Polar Sea on the north as a continuous open plain, unbroken by any transverse chain of mountains.

THE NORTHERN BELT.

The first of these belts, that from Oregon northward, has three physical features, which are the key to the cli-

mate, viz.: the disappearance of the Coast Range which is found farther south, and the drawing near to the coast of the northern extension of the Sierra Nevada, which as a continuous, but here somewhat broken, and rather low range, follows near to the coast, and separates it from the inland plateau; a shore-line closely hugged by the southward flow of the return-current of the Kuro Siwo—an all-the-year on-shore wind-current of the moist counter-trades.

The result is a climate which, while showing somewhat of the extremes of the high latitude, is yet tempered winter and summer by the constant inflow of the counter-trades, an air-current rendered equable by the mild ocean-waters over which it passes before reaching the land; yet, because of the lower and broken character of the range back, this coast climate receives through contiguity, and through irregular wind-currents from the land, somewhat of the harshness of the inland plateau which is in its northern part a frozen polar plain.

This portion of the Pacific coast resembles in a marked degree, physically and climatically, yet in a more temperate type, the west coast of Northern Europe, from and including the British Islands, and north through Sweden and Norway. This belt is marked also by an excess of moisture. Thus the annual precipitation at Sitka is one hundred and ten inches; at Portland, Oregon, fifty-three inches.

The all-the-year on-shore current of the counter-trades is, winter and summer, a rain-current. While precipitation is heavier in certain months of the year, still no month is without its regular rains, its fogs and clouds. In the extreme north, or in the mountains farther south, this precipitation is of course during the winter months, more or less, in the form of snow. While the portion of this belt north of Oregon is not marked by a deep soil, the abundance of moisture, and the always moderate temperature, stimulate a vigorous life of the hardier classes of vegetation, and hills

and valleys are covered by a dense growth of forest, made up chiefly of fir and pine.

This is especially the timber-belt of the Pacific coast, and is the great source of supply for lumber, which is shipped by sea to the various points of demand. Southward, the timber-belt tends to retreat from the valleys into the higher mountains to secure the requisite coolness and moisture, except what is known as the redwood belt, which extends along the immediate shore-line as far south as midway on the California coast.

This northern belt is the one also rich in coal and iron, both of which grow scant in quantity, and the coal poor in quality, farther south. The abundance of timber, coal, and iron marks this belt as the future manufacturing portion of the coast.

Its low mountain-passes, easy grades across the continent, and abundance of good harbors, mark it also as one of the natural routes for transcontinental traffic. Already Puget Sound and the mouth of the Columbia are becoming terminal points for such trade.

Agriculturally, it is the belt of grasses, of rye, of oats, and of northern grains and fruits, and in its southern portion of the wheat-plant, the potato, and the apple. The annual temperature is too low for corn.

Its seas, like those of the west coast of Northern Europe, abound in fish of the most valuable kinds for food, such as the cod, the mackerel, and the salmon. Its fisheries are already of vast commercial value.

For healthfulness it ranks with the west coast of Europe; free from malaria, having the rheumatisms, the pneumonias, and the catarrhs of the north—a climate healthful for moderately robust constitutions; because of its continued dampness, and its low but not excessively cold temperature, not to be selected as the resort of delicate persons, of invalids, of consumptives; the future home

of a hardy, prosperous, sea-faring, fisher, agricultural, and manufacturing folk, having the substantial elements for the building up of a strong, vigorous civilization.

THE CENTRAL BELT.

This belt, as before stated, includes California as far south as a line drawn from that prominent headland of the coast known as Point Conception, in a northeasterly direction to the mountains at the south end of the San Joaquin plain, thence following the curve of the Sierra as it turns northward, and on to Mount Shasta and the Oregon line.

This belt presents, as its topographical characteristics, an extensive interior valley—the Sacramento-San Joaquin—in elevation but little above the sea-level, having its length from north to south, and shut in upon all sides by mountain-chains except one narrow outlet to the sea. Upon the eastern side of this valley a lofty and continuous range, the high Sierra, shuts it off, and isolates it from the interior of the continent. Upon the west a lower chain of mountains, the Coast Range, walls it in from the ocean—this range splitting into two in the mid-California region, and inclosing between them San Francisco Bay and a series of smaller inner coast valleys. Upon the north and the south this Coast Range coalesces with the Sierra, thus shutting in the great interior valley of the Sacramento-San Joaquin from the northern and the southern belts.

Upon the ocean-side of the Coast Range are numerous small coast valleys, each generally drained by a short water-course having a rapid fall to the sea.

The mountain development makes the central belt the most isolated and difficult of access of the three Pacific coast divisions. Upon the north are the heavy grades and the rugged mountains about Shasta. Upon the south the crests of the Tehachapi, crossed by the Southern Pacific at an ele-

vation of 4,025 feet ; while east of it and between it and the great interior of the continent runs the full length of the highest portion of the snow-clad Sierra with but few passes. The Central Pacific crosses this range on its way eastward at an elevation of 6,749 feet.

The Sacramento-San Joaquin Valley, which forms the greater mass of the agricultural land of this belt, is some four hundred and fifty miles in length by from seventy-five to one hundred miles in width. It is a level, untimbered plain, except in the foot-hills, with an elevation but little above the sea. The flat character of the plain, and the narrow outlet to the sea, make the river portions of the valley subject to severe floods in the winter.

Shut in from the sea-breeze by the Coast Range, the extremes of both heat and cold are much more marked than upon other portions of the California slope of the Sierra.

Thus, the mean average temperature of Sacramento for January is 46·6°; for July, 71·2°: at Visalia, January, 48·1°; July, 80·8°: at Los Angeles, January, 53·9°; July 70·2°: at San Diego, January, 55°; July, 68·4°.

The winter rain-currents, being from the south, have to cross the Coast Range of mountains to reach the San Joaquin portion of the valley, and in crossing are robbed of much of their moisture, giving at Visalia an annual rainfall of only 10·46 inches. The central and northern portions of the valley receiving the current which enters from the sea by the lower gaps about San Francisco Bay, have a much larger rainfall ; thus, Sacramento reaches an annual average of 18, while the northern portions range much higher, Red Bluff having 36·39 inches.

As a result, while the rainfall in the north is sufficient to insure constancy to agricultural returns, in the San Joaquin plain, and especially in its southern portion, the returns are much less certain. It is only a question of time, however, when this whole valley will be made to support

a dense population. The high Sierra back of it, with its peaks ranging from ten to fourteen thousand feet in elevation, its heavy winter snows, and its great water-shed, furnishes a summer flow of water which, when once fully utilized, will probably be sufficient to irrigate the whole plain. It is in this future development of irrigation, rather than in mines or commerce, that the true wealth of the central belt lies. Already extensive irrigation-works are in operation, but the need is for a comprehensive system under some general plan and with proper supervision.

Between this valley of the Sacramento-San Joaquin and the ocean lies the broken and irregular Coast Range of mountains, with its rolling hills, and its many smaller valleys, notably the valley of the San Francisco Bay and its branches. These valleys are, as compared with the great interior Sacramento-San Joaquin basin, small in area yet marked by a high degree of fertility. They possess a more equable climate and a more reliable rainfall, which in the valleys facing south is sufficient, in the driest years, to mature grain—in the valleys facing the north, less certain. The low elevation of the Coast Range, and the absence of accumulated snow, make the streams of these valleys small and unreliable, so that extensive irrigation is not possible. In many of them artesian wells help to supply the lack, and are utilized for watering orchards and gardens.

The central belt, as a whole, is marked by certain characteristics peculiar to itself, as contrasted with the northern or the southern. Lying south of the line of the moist, on-shore, summer counter-trades, it has an upper and controlling summer current, the continuous off-shore northeast trade-wind, blowing down from the arid plateaus of the interior of the continent. It is this current which gives to the central belt the rainless summer, and the dry, clear atmosphere for which it is noted. The excessive dryness makes the air seem, to one unaccustomed to it, even harsh.

In this respect it is unlike either the northern or the southern belt.

The shore-line, which keeps the general east-of-south trend of the northern belt, is still closely hugged by the return-current of the Kuro Siwo. This current, still retaining the coolness of the Alaskan seas, is now in summer of a lower temperature than the land. The heating of the interior valleys gives rise, during the after part of each summer day, to a strong, surface-current sea-breeze which, as the temperature of the land drops toward night, bears in a heavy fog that envelops the shore-line and the valleys adjacent to the sea. This wind, with its attendant fog, is especially marked wherever a gap is found in the Coast Range, giving easier access to the heated interior. It is the coolness, and the nightly moisture of these summer fogs, which draw the forest-line well down the coast in Northern California. To persons of delicate constitution, those who do not make blood and bodily heat rapidly, these keen sea-breezes and the chill fog are very trying.

From the long plains of the Sacramento-San Joaquin come at times, more especially during the late summer and the autumn, hot, dry winds which are not found in either the northern or the southern belt. In the same way during the winter, cold, dry winds sweep from the now chilled surface of these plains, giving to the central belt the norther.

Climatically, then, the central belt shows less moisture than the northern, an absence of summer rains, a dry, stimulating summer air, often marked by excessive heat—with, however, a cool, foggy coast.

Agriculturally, it is the home of the wheat, the barley, but not, except in certain warmer portions, of the corn ; it grows the apple, the pear, the plum, the peach, the cherry, the currant, and with these the fig of Southern Europe.

In a few sheltered spots in the foot-hills the orange and lemon have been grown for many years, but not in sufficient

quantities to become an article of much sale in the markets. The vine finds a congenial home in all the interior, and through the coast counties, except in some of the more exposed localities. All the vegetables of the temperate zone are found. Herbage is annual, having its season of growth during the winter, drying up in the summer. It is a rich, fertile land, comparing with Central and Western France, but with less severe cold during the winter. It will be made to support a dense population, rather by agriculture than by manufactures or commerce.

Commercially, the central belt is less fortunately located than either the northern or the southern. It has back of it the longest lines of land-carriage across the continent, the distance from San Francisco to New York being in the direct line twenty-five hundred miles, while from Puget Sound to ship navigation on the lakes is only fifteen hundred miles, and from Los Angeles or San Diego to tide-water on the Gulf of Mexico is only thirteen hundred miles. It has also back of it the highest grades and the heaviest snows of all the various transcontinental lines, for both the Sierra and the Rocky Mountains are highest in their central part. The Northern Pacific crosses the Cascade Range at an elevation of 3,980 feet, the Rocky Mountains at 5,873 feet. The Central and Union Pacific line from San Francisco crosses the Sierra at an elevation of 7,017 feet, and the Rocky Mountains at some 8,242 feet. Yet the Southern Pacific line from Los Angeles to the Gulf crosses the Sierra at an elevation of only 2,560 feet, and the Rocky Mountain chain at 4,614 feet, and is practically south of the snow-line.

The commercial supremacy which San Francisco, as the metropolis of the central belt, secured in the early days through the first rush of population to the mines of that region, is already passing away, the northern and notably the southern belts having developed trade-centers of their

own, and having now the commercial advantages which come of shorter lines, lower grades, and lighter snows, and also of productive interior routes across the continent, the central belt having behind it the most arid and barren portion of the great inland plateau.

In healthfulness, this central belt ranks, as in climate, with Central France, but having many advantages arising from the milder winter and the dry summer. It will be the home of a healthy, vigorous race; yet to the invalid its coast winds have a harshness which is keenly felt.

For certain seasons, there are localities in the foot-hills of both the Coast Range and the Sierra which could hardly be bettered. The interior valleys show some malaria, certain portions decidedly so. Shut off as they are from the force of the ocean-winds, the effect of the extensive irrigation, which is becoming a necessity, upon the development of malaria, is an open question. The coast and the coast valleys are almost entirely free from it. Apart from these sections which develop malaria, there can scarcely be said to be endemic diseases. The keen winds of the coast bring with them somewhat of neuralgias, subacute rheumatism, catarrhs, and some pneumonia, pleurisy, and bronchitis. The interior is quite free from them.

THE INTERIOR BELT OR PLATEAU.

Geographically and climatically, the Rocky Mountain range is ordinarily spoken of as the dividing line or ridge of the continent. There are reasons why it should be so considered. Under the name of the Andes in South America, the Sierra Madre in Mexico, and the Rocky Mountains in North America, it is the one continuous range which reaches from extremity to extremity of the continent in a practically unbroken chain.

East of it, all drainage is into the Atlantic and its connecting waters; west of it, into the Pacific and its connect-

ing waters. At its east and west bases lie two great interior valleys.

They present some striking analogies. Each is separated from the ocean by a double coast system of mountains —the Eastern by the Alleghanies and the Blue Ridge, the Western by the Sierra and the Coast Range.

Each extends upon the north and the south to the waters of the sea, with no well-marked transverse range of mountains to break the long sweep of the ocean-winds. Each also subdivides its water-shed into three distinct portions, an upland central basin and two sloping plains facing respectively northward and southward to the sea. Each drains its southern plain by a great southward-flowing river, and each of these enters the ocean, not directly, but through a connecting gulf—the Mississippi by the Gulf of Mexico, the Colorado by the Gulf of California. Each has, or has had, in its central basin a great system of inland seas, and each drains its central basin by a large transverse river entering the ocean directly—the Eastern by the St. Lawrence, the Western by the Columbia. Each has upon the extreme north another great river draining its northern slope—the Eastern valley having the Mackenzie, the Western the Yukon ; and here also, despite an apparent break in the analogy, it still in reality holds true, for while the Mackenzie empties into the Atlantic indirectly by the line of the Polar Sea, and the Yukon apparently directly into the Pacific in that portion called the Behring Sea, yet in reality this sea, from its walling off by the long chain of the Aleutians, and by the Arctic change which comes to its shores north of these islands, belongs climatically with the polar rather than with the Pacific waters.

Both northern slopes are much alike. Each lies open to the cold polar winds. Each has a harsh, inhospitable climate. Each has a moderate rainfall. And each is but little known.

These are the analogies. They are largely geographical and topographical. Now begin the divergencies. They are largely climatic. The central basin and the southern slope of the interior valley lying at the east base of the Rocky Mountains belong with the great, well-watered, fertile river-valley systems of the world. Of such is the valley of the Amazon, of the Rio de la Plata, of the Congo, of the Ganges, of the Yang-tse-Kiang. They are, by the mere working of climatic laws, the natural home of a non-migrating population, and the seat of a fixed and settled civilization.

The central basin of the interior valley upon the west of the Rocky Mountains is in many respects the opposite of this. It belongs rather with the great arid uplands of the world. Only Central Asia has its counterpart.

Like the uplands of Asia north of the Himalayas, its rain-winds come to it wrung almost dry of their moisture by the high mountains which they must first cross. Then, too, the elevation, with its attendant rarefaction of atmosphere, leads to a rapid evaporation which desiccates the soil and stints vegetable life. It is the basin of that Western system of inland seas, twin to the five Great Lakes of the Eastern upland, but which, unlike them, dried up with some far-reaching change of climate in the ages long past; only wave-marks upon the desolate mountain-sides and the surf-worn pebbles of old beach-lines tell of the waters which once covered the broad plains—these, and the salt, and the alkali, and worn sea-shells blown in the drifting sands, and the whitened bones of old marine monsters, and the silence, and the desolation.

The basin of this old inland sea, or seas—for no doubt it was an irregular chain rather than one body—included much of Utah and Nevada, portions of Eastern Oregon and Southern Idaho, and possibly some small portion of Northwestern Arizona. The southern rim was probably

that uplifted plateau through which, for four hundred miles, the waters of the Colorado force their way in the depths of the Grand Cañon. The northern rim might have been some of the low ranges about the head-waters of the South Fork of the Columbia.

Upon the map its southern boundary would be lined by the thirty-sixth and its northern by the forty-third parallels of latitude. It is the portion of the inland plateau corresponding to the central climatic belt as described upon the Pacific coast.

This basin of the interior valley has an elevation above the sea of from four to five thousand feet. A portion of its area is now drained by the head-waters of the Colorado and its tributaries, a portion by the South Fork of the Columbia, and a portion has no outlet to the sea, but the waters of its streams are lost in the sands, or form shallow salty lakes, which maintain an unequal struggle with the rapid evaporation.

The southern slope of this interior valley includes Arizona and that portion of Southern California lying east of the Sierra. From an elevation of five or six thousand feet in the mountains of Northern Arizona it drops gradually to two or three thousand in the upland valleys of Central Arizona and upon the Mojave Desert, and down to the sea-level as it approaches the Gulf of California, passing even to several hundred feet below the sea in the basin of the Colorado Desert.

The Colorado River, which for four hundred miles had flowed through the Grand Cañon at a depth of from four to five thousand feet below the plateau, now emerges upon the level of the open country, while the rivers from the mountains of Eastern Arizona make well-defined streams running through fertile alluvial valleys, which at intervals widen out into broad plains.

The salt and the alkali of the central basin grow less

noticeable under the better drainage of well-defined river systems reaching the sea.

Climate.

The central basin and the southern slope of this Western interior plain of the continent may be best described climatically together, noting differences when found. In temperature the winters of the central basin and of the mountains of the southern slope are much like corresponding latitudes and elevations east of the Rocky Mountains—cold and harsh, with snows instead of rain. The winters of the plains of the southern slope are mild and pleasant. The summer temperature is high, often reaching 100° to 110° in the heat of the day, but with an atmosphere so dry that the heat is not oppressive. Spring and autumn give the perfection of an interior upland climate, especially in the settled weather of the southern slope. The spring months of this slope with the warm yet not hot days, and the gorgeous coloring of the strange desert plants as they burst into bloom, have a charm never to be forgotten by one who has lived the life of the plains.

The annual precipitation is from twelve to sixteen inches, in the central basin, and the mountains and plains of the southern slope, diminishing to four or five inches as the level of the Gulf is reached in Southwestern Arizona. The division into a wet and a dry season is not so clearly marked as upon the corresponding portion of the Pacific coast. There are two seasons of precipitation to each year, midwinter and midsummer, with threatenings of rain and often light showers through the intervening months. It seems to be climatically a kind of battle-ground between the fixed wet and dry seasons of the coast and the all-the-year rains of the country east of the Rocky Mountains. It probably feels the effect of the edge of the Gulf-currents which may readily cross

the low elevations of those mountains in this part of their course.

Ethnologically, it is by natural laws, like similar regions elsewhere in the world, the home of the nomad, where man becomes migratory in character, traveling with his flocks and herds in search of fresh food as the scanty herbage of one spot becomes exhausted.

Yet this Western interior valley of the continent has in it, especially upon that southern slope which includes Arizona and the region about the head-waters of the Gulf of California, infinite possibilities of development, and the capacity for sustaining a large population, and a settled and well-ordered civilization. The traces of old irrigating canals, leading from the rivers out over the deep-soiled plains of Central Arizona, show that the land once had such a population. With the more skillfully planned irrigating works of modern science, and the greater capital available, it will do this again, but on a much vaster scale.

The central basin, which includes Utah and a portion of Nevada, has less possibility of such development; the climate, owing to the greater elevation, is more rigorous; the drying up of the old inland sea, and the defective surface-drainage, have left the soil much more strongly impregnated with salt and alkali; and the water-courses are small and often deeply sunk in cañons below the level of the surrounding country. Agriculture here must be in isolated spots, with the broad stretches of desert between.

But upon the southern slope, that portion including Arizona and the regions about the Gulf, all this is changed. The climate, while hot in midsummer, is but little more so than in the basin farther north, while the winters are free from harshness. While the rainfall, like that of the central basin, is insufficient to mature crops at any season unassisted by irrigation, yet the water-supply for irrigation is abundant and unfailing, and the great river-valleys, and

the plains bordering them, lie in the best possible shape for irrigation.

Two great valleys will be the especial centers of the future development. The Colorado River, one of the six great rivers of North America, after draining the west slope of the Rocky Mountains through Wyoming and Colorado, and that portion of Utah east of the Wahsatch Range, emerges from the mouth of the Grand Cañon as a broad, navigable river, to flow for four hundred and fifty miles more through a rich alluvial valley, before entering the head of the Gulf of California. At its lower end this valley broadens out and merges into a great alluvial plain of hundreds of square miles about the head of the gulf, and extending off into the Colorado Desert.

The land in this valley system which may be irrigated and made productive, probably amounts to several thousand square miles, and, for sugar-cane and other semi-tropic agricultural products, has probably no equal in North America. The river which is to water this region is at its flood with the melting of the Rocky Mountain snows in midsummer, when the needs of irrigation would be greatest. At the time of the summer floods the back-water from the river flows in a broad stream, called New River, at one point down the long slope into the Colorado Desert, which is here below the level of the sea, thus giving a small section of land a wetting for a few days. In the summer of 1868 the writer crossed this stream sixty miles back from the main river, and passed through fields of a species of wild hemp ten and twelve feet in height, the growth of the one flooding.

Sixty miles above the mouth of the Colorado, at Fort Yuma, it receives from the east as tributary the Gila River. This is also a broad but not navigable river, which, draining the mountains of Eastern Arizona, and a portion of New Mexico, and like the Colorado having a midsummer

flood, flows for three hundred miles directly westward across the middle of Arizona, having also a wide alluvial valley of the most fertile soil. From both north and south it receives tributaries which traverse similar long valleys, or rather from their extent to be spoken of as plains, which are of like fertility with the valley of the Gila. It is in these plains that the most extensive traces of the irrigating canals of some prehistoric race are to be found.

Already large settlements have been made in the valley of the Gila and its tributaries, and extensive systems of irrigation have been planned and carried out. It is only a question of time when the valleys of the Colorado and the Gila, and their tributaries, will support a population of millions, and rival the valley of the Nile in productive capacity. Besides sugar-cane and cotton, which would no doubt do well, these valleys are the home of the wheat, corn, the melon, the vine, and the fig.

Besides these larger valleys, the mountains of Northern and Eastern Arizona are dotted with smaller valleys where from the elevation the rainfall is sufficient to produce crops of grain, and in which, and upon the adjacent uplands, are some of the richest grazing-lands of the West. This is already becoming a noted cattle-country. While upon scouts in 1867–'68, the writer passed through many of these smaller valleys where the natural growth of grass was more luxuriant than in any Ohio valley meadow. The mountains were covered with a growth of pine, oak, and black walnut.

This southern slope of the western interior valley lies opposite the southern climatic belt upon the coast.

In healthfulness it ranks with the desert interiors of the world. Practically free from endemic diseases, except in some low and badly-drained valleys which have a certain amount of malaria, its value for tuberculous affections is only beginning to be appreciated.

The central basin, with its harsher winter climate, while markedly salubrious in many respects, shows more of a tendency to the development of inflammatory affections of the lungs and air-passages.

THE SOUTHERN BELT.

At Point Conception, in latitude 34·30°, the Pacific coast, for the first time in its long course from Alaska southward, makes a decided change. Abandoning the general east-of-south direction, which it has held for two thousand miles, it now turns and bears off almost due east. Rounding the point, all at once the helm of the southward-bound steamer is put hard a-port, and, leaving behind her a foamy wake which is almost a segment of a circle, her prow turns toward the sunrise.

The writer vividly remembers, after all these years, his first trip down the coast, when it was, as yet, all new and strange to him. As we rounded the point at the light-house, and entered the Santa Barbara Channel, almost in a ship's length we had run out of the fog and had entered into the sunshine. The cold north wind, which had been whistling through the rigging and chasing us down the coast for three hundred miles, died away. The rough sea calmed to a glassy swell. And as we sailed on, hour after hour, over a summer sea, I realized that I had entered into that Southern California of which I had heard. What seemed to me then almost like the working of a magician's spell, is now, after these years of climatic investigation, no longer magic, but only the working out of natural laws.

With the change in the direction of the coast-line come other changes.

The Sierra, which, from Alaska south, follows the general trend of the coast, turns also from its northerly and southerly course, and now, as a great transverse range, runs directly eastward, walling in the country from the north,

and then, turning southward again with a great curve, walls it in again upon the east.

The land which in Northern California faced off westward to the sea, now faces southward toward the sun.

The Kuro Siwo, which, from the Aleutian Islands south along the coast of Alaska, of British Columbia, of Washington, of Oregon, and of Northern California, hugged the shore-line closely, is now shot clear of the land by the prominence of the cape, and with the sharp turn of the coast eastward never approaches the shore-line closely again.

This separation of the Alaskan current from the land is still further helped by the presence of a long chain of islands which, beginning with the Island of San Miguel, just south of Point Conception, follows the coast at a varying distance of from twenty-five to fifty miles as far south as the Lower California line, and incloses a sheltered and comparatively shoal channel. Within this channel, instead of the cold waters of the northern current, is a slight return-current of warmer water flowing up the coast from the south.

With the change in the direction of the coast comes a change also in the character of the interior. The type of the central belt, as already shown, was a double mountain-range, the Sierra and the Coast, including between them, and almost entirely shut in from the sea, the Sacramento-San Joaquin plain, which contained the greater portion of the agricultural land of that belt.

The same general type is continued in Southern California, but with a marked modification. The Sierra still continues to wall in the country from that great arid upland which makes the heart of the continent, only changing its direction; but on the other side the Coast Range no longer continues to shut it off so completely from the sea. This Coast Range begins to break down, and at times entirely

disappears, leaving the whole interior more open to the sea. This interior plain in Southern California is made up of the long reach which includes the San Fernando Valley, the Pasadena country, the valley of the San Gabriel River, the Pomona and Ontario uplands, the valley of the Santa Ana River, in which lie Colton, the San Bernardino country, and Riverside, and then the long plains of the San Jacinto River southward. Unlike the inland plain of Northern California, it is very irregular in outline, branching out in many directions, and often merging, almost insensibly, into rolling upland *mesas*. This plain, with its irregular windings, is about two hundred miles in length, with a width varying from fifteen to thirty miles. It is smaller than the corresponding interior valley of Northern California, but the reverse is the case with regard to the coast plain. Instead of the narrow rim which makes the ocean frontage outside of the Coast Range in the northern portion of the State, in Southern California an extensive plain faces the sea, having a length of about a hundred and fifty miles, and a depth varying from fifteen to twenty-five miles. This does not include the long valley of the Santa Clara and San Buenaventura Rivers, which fronts on the ocean for some thirty miles, with a depth of about seventy-five, nor the Santa Barbara plains. Between this coast plain and the long interior valley, the Coast Range of mountains, instead of the continuous chain which it presents in Northern California, is broken, and, opposite the Los Angeles plains, for a space entirely disappears. The whole country—interior valley system as well as coast plains—becomes thus a great open coast-land facing the south, and with the high Sierra for a background.

The area of the plains of Southern California is really largely increased over their apparent size by the rolling, hilly uplands into which, in many directions, they merge. This is especially the case in the country which lies be-

tween the San Fernando Valley and the lower Santa Clara Valley, and also in the great upland which rises from San Jacinto toward the south in San Diego County. These uplands have a rich, deep soil, and are well watered by numerous small streams.

The Sierra, which, north of the so-called Mojave Desert, makes a great curve westward around the south end of the San Joaquin plain of the central belt, turns southward again opposite Santa Barbara and Ventura Counties, and, doubling back upon its course, walls in the west end of the desert, then, turning directly eastward, separates the desert from the Los Angeles and San Bernardino plains. Turning southward again it stands as a wall between the Colorado Desert and that portion of Southern California lying west of its base. The range varies in height from five to seven thousand feet, with peaks reaching from eight to eleven thousand feet. While maintaining this great elevation it yet develops one feature which it does not possess opposite the central belt. It breaks down at several points into low passes between the coast and the interior of the continent. The pass by which the Central Pacific, on its way eastward from San Francisco crosses the Sierra is, as before given, 7,017 feet in elevation. Yet the Soledad Pass by which the Southern Pacific crosses the Sierra in Southern California is only 2,822 feet; the Cajon Pass by which the Atchison and Topeka enters is about the same height; and the San Gorgonio Pass, by which the Southern Pacific crosses on the road to Galveston and New Orleans, is only 2,560 feet above the sea. There are numerous other comparatively low passes through the Sierra at the west end of the Mojave Desert, leading toward the sea in Ventura and Santa Barbara Counties, and also through the range south of San Gorgonio. These passes through the southern Sierra have a marked influence, not only upon the climate of the coast portions of Southern

California, but also upon that of the deserts lying at the east base of the Sierra. Their influence upon the future trade development of the coast will be noted under a different heading.

The Mojave Desert, lying beyond those passes which open northward, has an area of several thousand square miles, with an elevation above the sea of some two thousand feet. The Colorado Desert, which lies opposite the passes leading eastward, is somewhat less in area, and has a portion of its surface three hundred and fifty feet below the level of the sea.

The channel islands are eight in number, stretching along the coast for a hundred and fifty miles. Six of these are of considerable size, varying from twelve to twenty-five miles in length and from five to ten miles in width.

Rainfall.

The division of the year into a wet and a dry season is found in the central Pacific belt, and applies also to the southern belt. The counter-trades of the North Pacific coast, following the sun southward in the autumn, reach the coast of Southern California shortly after the rains have begun in the northern portion of the State.

The first rain may come anywhere from the middle of October until the middle of November. A south wind comes in from the sea; clouds bank up along the southern horizon, and then about the mountain-tops, and broken, rainy weather, lasting for several days, follows, during which time the precipitation amounts to from two to three inches.

This first rain may also give snow in the mountains, but not always, nor to any great depth.

After three or four weeks of clear, pleasant weather, comes another rain, much like the first, and this time gen-

erally with a decided snowfall in the mountains, as the temperature is now showing the winter coolness.

These rains wash the atmosphere clear of haze and dust, and it now begins to display the remarkable transparency for which the winters of Southern California are noted. Mountains a hundred miles away seem only distant a morning's ride.

With the coming of the rains the land begins to turn green after the repose of the rainless summer, and soon hills and plains are covered with the richest verdure. There is a peculiar, and, to eye of the writer, exceedingly pleasant shade to the green of the annual vegetation of the Pacific coast. Without professing to be an expert in the description of color, he would speak of it as a mingling of yellow, producing a light yellow-green rather than the darker blue-greens of vegetation upon the Atlantic coast.

About the latter part of December may be expected one of the heavy winter storms. Setting in with a strong south wind from the sea, rain begins to fall, and for a week or ten days more or less constant cloudiness, with rain a portion of each twenty-four hours, will be the rule. The rainfall is apt to be limited to the afternoon and night, leaving the morning free. This storm may give from six to eight inches of rain. In the mountains it is precipitated in the form of heavy snow, the tall peaks and the continuous range being clad in white from the highest crest almost to the level of the open plain.

January is generally a month of clear skies. To many persons this is the pleasantest portion of the year. An atmosphere absolutely freed from all impurities, cool, and yet free from all harshness, so that it comes to the lungs like the exhilaration of the purest ether; a warm sun flooding from morning to night plains that have the green of the early spring of other lands; nights cool enough for a light frost on the lowlands; and the mountains, as far as the eye

can reach, a great uplifted bank of the purest white. The writer remembers yet, after twenty years, his first glimpse of the land as he lay, all one long, sunny, January morning, on the steamer at the San Pedro anchorage.

In February another storm, like that of December, may be expected; then scattering rains, of two or three days' duration, at intervals of several weeks, through March and April, and the rainy season is over.

A mistaken impression prevails, and especially among the people of Northern California (who seem to be more ignorant of the climatology of Southern California than the people of the East), as to the amount of rainfall in Southern California, and the reason for the mistake is very apparent. The general law of the rainfall over the coast is of a steadily diminishing precipitation as one goes southward. Thus, the rainfall at Sitka is 110 inches per annum; at Portland, Oregon, 53 inches; at San Francisco, 24 inches; at Visalia, 10·46 inches. The natural inference would be that, as Southern California lies still farther south, the rainfall would be proportionately still less.

But now comes in play the working of another law, to which allusion was made in speaking of certain valleys in Northern California which face fairly toward the south—the increased rainfall which results from a direct southern exposure with a high background. The coast of Northern California, with its direction of slightly east of south, faces at an acute angle toward the winter rain-current, and only receives a portion of its force, while its mountain-ranges, with the same general trend, receive the current at a slant. The full force of the rain-current is thus only partly received by Northern California, while the mountains act only imperfectly as condensers.

As an illustration of the working of the law may be given the valleys about the Bay of San Francisco. Thus, Sonoma Valley, facing the south, receives a rainfall nearly

one half greater than Santa Clara Valley, only a few miles across the bay which faces toward the north. The working of the same law is seen in the excessive rainfall about Shasta, at the northern end of the Sacramento Valley.

It is the working of this second law which, in Southern California, brings the rainfall up again to the average of places much farther north. The average of the rainfalls at Los Angeles, running through a series of years, varies but little from that of Sacramento, and yet they are separated by four hundred miles in the north and south line; while Visalia, lying midway between, has, under the working of the general coast law, a rainfall of but little more than half as much.

In Southern California, owing to the sharp turn eastward made by the coast and the mountains, the whole country faces at a right angle to the winter rain-currents from the south, while the broad coast plain upon the sea, and the breaking down of the Coast Range as before described, admit the full sweep of the storm. Then comes the high Sierra, which makes the background of the country, standing like a huge wall directly across the line of the rain-current to condense and wring out of it the fullest amount of moisture before it scales the rugged heights, and passes on to the inland plateau.

The annual average precipitation at Los Angeles is eighteen inches; along the base of the mountains, back of the plains it is from thirty to forty inches. No record has been kept farther up in the mountains, so that the precipitation of rain and snow is not known.

Fogs.

In common with the whole Pacific coast the shore-line of Southern California has, from May to September, the night-fog. This fog comes rolling in from the sea about

sunset, or two or three hours later, and disappears shortly after sunrise. It is free from the chill and harshness of the fog on the colder upper coast, and is a refreshing feature to the climate, while its effect upon vegetation is very marked. It is a virtual atmospheric prolongation of the rainy season for the immediate coast. It only extends a few miles inland, so that persons who dislike the moist air live farther from the sea.

Atmospheric Humidity.

The question of the amount of invisible moisture in the air, apart from the visible moisture which comes in the shape of rain or fog, what is technically known as atmospheric humidity, is an important one for the transient invalid tourist as well as for certain types of constitution among more permanent residents in a country. The variations in humidity at a few points in the United States may be shown by reference to the "Reports of the United States Signal Service." At New York it is 72 per cent; at Salt Lake, 44; at San Francisco, 76. On a more southern line, it is in Florida an average of 75; at New Orleans, 79; at Yuma, 43; at Los Angeles, 68; at San Diego, 71.

In portions of Southern California farther away from the sea, as in the foot-hills, in the San Fernando Valley, or any portion of what was described as the interior coast valley of Southern California, the per cent would probably drop to 60; while upon the Mojave upland or in the Colorado Desert it would average about as at Yuma, or even drier. At no other point in the United States is so great a range in humidity to be found within a comparatively limited area as in Southern California, as all of these variations are to be reached by rail within three hours' ride. This fact has proved of exceeding importance in the management of the various shades of invalidism, as one has at

his command, without the fatigue of a long journey, his choice of the cool, damp air of the sea, or the warm, dry air of the interior, a choice only to be found elsewhere by traveling thousands of miles.

Sunshine.

Following the same lines across the continent for comparison, the average number of cloudy days per year is found to be at New York, 119; at Salt Lake, 88; at San Francisco, 79. On the more southern line, average for Florida, 51; at New Orleans, 97; at Yuma, 14; at Los Angeles, 51; at San Diego, 85. The average through the inner valleys of Southern California, away from the immediate vicinity of the sea, would probably be about 40, while upon the Mojave or in the Colorado Desert it would rate with Yuma.

Winds.

The feature which most impresses the observer upon the Pacific coast in his study of the winds is their regularity. He feels that while the wind may blow "where it listeth," yet there is a law to the listing. He soon learns that "fickle as the winds" is a saying which here loses its force. He knows that at certain seasons there will be a prevalence of wind from a certain quarter, and that at a certain time of each day the wind will rise. He knows that a persistence of the wind from a certain quarter will bring a very moist atmosphere and rain, while the current from another quarter as surely means clear, cool weather, with a moderately humid atmosphere; and from yet another quarter means an exceedingly dry atmosphere, cold in winter, hot in summer.

Probably in no other portion of the world does climatology approach more nearly to the standing of an exact science than upon the Pacific coast. One gets, as it were,

behind the scenes, and sees how Nature manages her wheels and pulleys in the ever-shifting panorama of the seasons.

While the whole Pacific coast has much less really calm weather than the Atlantic coast, yet the records of the Signal Service show that the total wind-movement is less; in other words, in a given length of time there are more hours of wind, but of less velocity. It is a region of more continuous wind-currents, but of a milder character. The brisk sea-breeze is diurnal; the gale rare; the hurricane and the cyclone unknown.

The winds may be classified into the trades and counter-trades, which regulate the seasons;

The land and sea breeze, which regulate the daily temperature; and

The norther, which may come either winter or summer, and which is rather a law unto itself.

The working of the trades and the counter-trades has already been explained in this article, but it may not be amiss to repeat somewhat.

The counter-trade is an on-shore rain-wind from the Pacific, which persists winter and summer upon the coast from Oregon northward, growing heavier with the advance northward, until its maximum force and rainfall are found in Southern Alaska. Farther northward it seems to lose its force, and the rainfall diminishes again.

The northeast trade-wind is an off-shore, dry-air current, found in the daytime more in the upper regions of the atmosphere, passing out to sea above the lower stratum of on-shore sea-breeze, dropping down at night in all probability nearer the earth, and adding force to the off-shore night land-breeze. If proof were needed in addition to the well-known law of the trade-winds, of its persistence in the daytime, it is shown by the columns of smoke which often, during mountain-fires, ascend some thousands of feet with

a sharp slant from the ocean, and then turn and float horizontally out to sea. The same fact is shown by the showers of ashes and cinders which will at times drop down by the sea-side, falling through the on-shore sea-breeze when the fires which must have produced them are far inland in the mountains.

This dry, off-shore trade-wind is during most of the year the prevailing wind of the southern portion of the Peninsula of Lower California, hence the almost rainless character of that climate.

Along that portion of the coast lying between the all-the-year rainy, on-shore, counter-trades of the North Pacific, and the almost all-the-year off-shore and rainless northeast trades of the peninsula, the winds follow the sun in its annual changes, the dry trade advancing northward, and the rainy counter trade retreating before it in summer; then with the return of the sun southward in winter the rainless, off-shore trade-wind retreating southward, and the rainy counter-trade following it down the coast. Hence, the regular semi-annual alternation of these two great wind-currents, and hence, also, the regular alternation to this portion of the coast, as before shown, of a wet and a dry season.

The daily sea-breeze, which is characteristic more especially of the California portion of the Pacific coast, and which is caused, as before shown, by the heating up of the land in the interior plains, and the consequent rarefaction and rising of the air, with the rushing in of the cooler and heavier current from the sea to replace the ascending column—this sea-breeze as found in Southern California has some marked differences when contrasted with the breeze as found in Northern California. It is less violent, and it is free from the harshness which characterizes it farther north; it also reaches more generally throughout the interior. The lessened violence is accounted for by two facts,

the more open character of the country, and the greater proportionate area of the sea-plains as compared with the interior valleys. In Northern California the shore-line is closely followed by the Coast Range of mountains. This range averages several thousand feet in height, with only here and there a break or a pass to the interior. The current of cool ocean air, rushing in from the sea to that heated interior, finds its way through these breaks, and like the current of a river—for this is only an aërial river, and observes the same laws—carries the violence of its narrowed current far inland before the contracted volume dissipates itself in a gentler flow. Hence the violent winds of many points upon the coast of Northern California, the Golden Gate at San Francisco being a well-known instance. The lack of a coast-plain exterior to this Coast Range of mountains also has its effect, as the in-rushing current is not thus tempered and robbed of a portion of its violence before reaching the breaks in the range.

In Southern California, on the contrary, a broad ocean-plain first receives the ocean-wind and tempers it as it comes from the sea ; then, instead of having to make its way through a few narrow passes in the Coast Range to reach the interior, it finds that range broken down, and at times, as for a number of miles eastward from the city of Los Angeles, disappearing entirely. This change in the character of the Coast Range allows of a broad, free entrance for the wind to the interior, and the broader current, like the broader channel to a river, means a gentler current.

This same fact of the broader inlet for the sea-breeze through the Coast Range in Southern California, explains its better distribution throughout the interior than in the northern portion of the State. Instead of the violent in-rushing current sweeping by those portions not lying directly in its path, and leaving upon either side, and behind

the adjacent mountains and hills, a hot, stagnant air, the gentler, broader inflow eddies around each projecting point, and into each connecting valley, cooling all with its freshness.

The lessened harshness of the Southern California sea-breeze, apart from the influence of the broad coast-plain, is to be accounted for also by the deflection of the down-coast cold current of the Kuro Siwo seaward at Point Conception, and the warmer inshore waters of the long Santa Barbara Channel over which this wind passes before reaching the shore. The sea-breeze is thus, even before reaching the shore, robbed of much of the ocean harshness.*

This sea-breeze sets in for the season as the cool spring months pass by, and through the whole summer, and late into the autumn, by ten o'clock of each day its refreshing influence is felt, a gentle wind blowing constantly until evening. Then by midnight the wind changes, and through the latter portion of the night and the early morning, the land-breeze blows down from the mountains, bringing the cool air of their high summits. This is a cool, dry, bracing air, unlike the wind that comes in from the sea. It has to it the scent of the sage-lands of the desert.

The norther is, owing to the topographical configuration of the country, less felt in Southern California than in the northern portion of the State. The valleys, which there run north and south, and so lie open their whole length to the sweep of the wind, owing to the change in the trend of the coast, run east and west in Southern California, presenting their narrow diameter to its sweep, while a like change in the direction of the mountain-chains places these great uplifted walls directly across the pathway of the wind

* The temperature of the sea at San Francisco is, for January, 52·1°; for July, 59°. At Long Beach, near Los Angeles, it is, for January, 60°; for July, 68·5°.

instead of parallel to its course, as in Northern California. While the great area of the country is thus sheltered on the north, there are local exceptions. The low passes, which have been mentioned as leading through the Sierra, admit here and there a stray sweep of the north wind, which at such points cuts across the plains with a channel almost as well defined as the banks of a river. Such wind-belts, while not common, are yet locally well known, and are an interesting feature in the climatology of the country. The north wind, whether felt in the winter or the summer, has a dry harshness peculiarly its own; and yet, apart from this harshness, it is not an unhealthful wind—rather, indeed, the contrary.

The sanitary value of these constant wind-movements along the whole California coast can hardly be overestimated. The stagnant, lifeless air of the heated spells of the Atlantic slope or the Mississippi Valley is here an impossibility.

Temperature.

A table of temperatures must be studied very carefully in a comparison of different countries, or an entirely mistaken impression may be received as to the climatic contrasts. Thus, take the annual means alone as a basis of comparison. Two points may lie upon the same isothermal line, each with a mean annual temperature of 60°. We may suppose the one to have a winter temperature of 20°, and a summer temperature of 80°. Its mean for the year would be the sum of these divided by two, or 50° for the year. The other might have a winter temperature of 45°, a summer of 55°; its annual mean would also be 50°. Yet in the former locality only the hardy trees and shrubs of the north would survive the cold of the winter, and the land would be buried in ice and snow; while in summer the mortality tables would show frequent deaths by sunstroke. In the

latter, fuchsias and geraniums would bloom in the door-yards the year round, and sunstroke would be unknown. The one is an equable climate, the other a climate of extremes, and yet the average is the same.

In actual practice the mean of each month is taken, and the sum divided by twelve to give the annual average; but, to show the fallacy which may underlie the result, the illustration as given above is not amiss.

In a table of comparisons, to avoid the tedious comparison month by month, a result sufficiently accurate may be obtained by giving, in addition to the mean annual average, the means of a typical winter and a typical summer month, as January and July.

If, in addition to these, the daily range of temperature, derived from a comparison of the night and the day observations, be given for the same months, a comparison sufficiently accurate for ordinary purposes will be attained.

This daily range is important, as one climate—such, for instance, as that of the Mississippi Valley—may during the summer maintain a continuously high temperature night and day, allowing of no refreshing sleep to the invalid; while another, as at many points upon the Pacific coast, although showing a nominally high daily average, may yet have comparatively cool nights.

The climate which is most conducive to health in the well, and which will prove best adapted to the restoration of health in the invalid, is that which, while affording the sunshine and the warmth of the day, and thus tempting to life in the open air, will yet be marked by a fall of temperature at night sufficiently great to admit of that refreshing sleep which comes where the protection of a blanket is necessary to comfort.

The following table gives, from the Signal Service reports, the temperature statistics of a number of well-known points upon both sides of the continent. The Florida rec-

ord is an average from the four stations which the Service maintains in that State :

	Annual mean.	Average. January.	Average. July.	Daily range. January.	Daily range. July.
New York	51·3°	30·0°	72·6°	13·2°	15·6°
Salt Lake	51·1	27·9	74·4	15·2	25·6
Sacramento	61·3	47·6	73·4	18·0	25·2
San Francisco	55·7	49·3	58·8	8·1	12·7
Florida	72·7	60·7	83·3	15·5	14·0
New Orleans	69·4	55·9	83·0	18·3	12·8
Yuma	72·0	52·8	91·4	29·1	29·4
Los Angeles	60·5	52·0	68·2	21·5	28·3
San Diego	60·5	52·8	66·9	19·0	14·6

While the table shows an average of temperature for the coast-line in Southern California, taking San Diego as a fair average among such points as Long Beach, San Pedro, Santa Monica, Ventura, and Santa Barbara, and for the line midway between the coast and the interior plains as represented by Los Angeles, yet there are many and well-marked variations from these averages. The coast-points differ among themselves : some a little milder than the average; as San Pedro, which, while standing upon the sea-shore, is yet peculiarly sheltered from the ocean-wind ; others, through exposure to a stronger wind-current, averaging a little colder.

So, too, farther inland will be found low, cold soils, with frost sufficiently severe almost every winter to interfere with the culture of semi-tropic fruits ; other belts where frost is never known, and where the tomato ripens its fruit every month of the year, and the banana flourishes. Back in the sheltered foot-hills and in small interior valleys, again, are found localities where the mercury in the middle of a hot summer day will range up to or above 100° ; while across the Sierra, on the Mojave and Colo-

rado Deserts, is found the dry, intense heat of the inland plateau.

In the winter, among the mountains and upon the higher plains of the Mojave, may be found the ice and snows of the north-lands.

This varied range of temperatures, within a comparatively narrow territory, offers a wide choice to the invalid in his selection of a home.

Agriculture.

In the early days of Southern California, the thought that it could ever become an agricultural country seems hardly to have entered into the minds of its scattered population of *rancheros*. The land was looked upon as only fit for grazing. The writer well remembers hearing the *old residents* of those days gravely argue that agriculture could not be made to pay; and they were proving the sincerity of their belief by importing from abroad the vegetables which they had upon their tables, the flour for their bread —everything, in fact, but the meat from their flocks and herds. Potatoes came by the sack, cabbages packed in crates, apples and other fruits by the box. And yet this was only eighteen years ago; and now great train-loads of these products, raised from the soil which was pronounced only fit for a cattle-range, leave daily on all the lines of railroads for export, while the waters of the harbors are dotted with sea-going ships which fill up with cargoes of wheat, barley, wine, raisins, and all kinds of dried and canned fruits, for every part of the world. The climate, the land, and their possibilities, were simply not understood.

The average American, the man whose ideas of farming were formed amid the summer rains and the corn-fields of the Mississippi Valley, had to learn over again how to

farm; and, now that he has learned the lesson, is growing rich on the land which was deemed comparatively worthless.

The early farmers had to begin their agricultural education in the new land by forgetting the word *winter*, and, instead of plowing and planting in the spring of the year, as they would in the East, seeing to it that their grain was put in with the coming of the early autumn rains. This lesson once thoroughly learned, no further difficulty was found in making grain-farming a success.

A mistaken idea has prevailed to some extent among people in the East that farming is only carried on in Southern California by means of irrigation, and that without it crops would be a failure.

For all small grains and winter crops irrigation is not employed. These are cultivated just as they are in the Mississippi Valley or the Atlantic States, and need only the regular rains of the winter and spring, or wet season, to mature them. Corn, however, which is a summer crop, planted after the rains are over, is in many localities irrigated, yet in many other sections the natural moisture of the soil is sufficient to mature the crop without irrigation. Upon many of the lands, after a winter-sown crop, raised without irrigation, has been harvested, another crop is raised when the rains are over, by means of irrigation, and thus the land does double duty.

In many places land will be seen which is never free from a growing crop from year to year, except during the few days when plowing for the new planting. Where water from the rivers is used, the sediment held in suspension constantly renews the fertility of the soil over which it is spread. There are sandy lands about Los Angeles which have now been cropped for three quarters of a century, with no apparent diminution of fertility. Water is also used, to a certain extent, in the great or-

chards and vineyards on the uplands and about the foot-hills. It is found that a limited quantity of water, given at the time when the fruit is swelling, makes a better quality, yet it must be used with discretion, as too much injures the quality. The tendency is, year by year, to the use of less water, it being found that, with thorough cultivation, the soil retains its moisture so well that irrigation is, upon many of these lands, unnecessary, and upon others less needed. In many sections are large bodies of moist lowland, called by the Spanish *cienegas*, and extending often for miles, which are natural pasture-lands, green all the year round. These are found to be especially adapted to dairying, and are with each year more and more devoted to that purpose. Such lands generally lie near the sea, and have the benefit of the heavy sea-fogs at night through the summer, and the cool ocean-winds during the day. The same lands are well adapted to the cultivation of corn and the Northern fruits, such as the apple and the pear. Peaches, the vine, and all the semi-tropical fruits do better farther back from the sea. The orange, the lemon, and the lime are found in their greatest perfection in the interior valleys and in the foot-hills which line the base of the Sierra.

Water for irrigation is obtained from the rivers, from all the small mountain-streams, and from artesian wells. Over the lowlands flowing wells are obtained at depths varying from seventy-five to two or three hundred feet. They are bored by machinery and piped with iron, and are quickly and cheaply made. In many of the apparently dry mountain ravines and cañons submerged dams are put in at favorable points, forcing the underground flow of water to the surface. In others, tunnels are run at a slight slope until bed-rock is reached, and the stream tapped and brought to the surface. In other localities extensive storage reservoirs are constructed. In the open valleys wind-

mills are used by the thousands for pumping water for household and garden use.

This general use of water, besides adding so immensely to the productive capacity, and thus to the wealth of the country, constitutes one of the great charms of life in both city and country. It gives to the farm-house the piped water and all the conveniences of life which are ordinarily found only in cities, while in city and country alike door-yards and lawns and flower-gardens are kept green and fresh through the rainless summer by the liberal use of water. Strangers and new-comers constantly express surprise at the pleasant surroundings of the country-houses.

Under this system of cultivation and with the natural fertility of the soil, stimulated to the utmost by the warmth of the long summer, and unchecked by any severe chill to the winter, the productive capacity of the country and its power of supporting a dense population are very great; in fact, the area of land which a laborer can take care of is much smaller than in the less productive East. The tendency is in consequence to a more thorough subdivision of land. Twenty acres are—especially in the fruit districts—a sufficiently large area for the united labors of a large family, and, with ordinary prudence, they will live more comfortably and clear more money than on the large farms of the Mississippi Valley. This great productive capacity explains the apparently high price of land.

The time is not far distant when what is distinctively known as Southern California will support and give wealth to a population of several millions. As yet, the country is hardly touched by agriculture—only a settlement here and there over the broad plains; but the influx is now so rapid and unceasing that all this will soon change. One noteworthy feature of the incoming population is that it is made up almost entirely of the well-to-do—those who bring intelligence and money with them, and are prepared to im-

prove their lands at once. Another feature is the colony system. Large tracts of land are purchased and water piped over the whole before they are divided and sold out; school-houses and churches are provided for, and all the conveniences and appliances which in other lands are found only in old settlements, and so the discomforts of ordinary frontier-life are avoided. No other portion of the Pacific coast is so well opened up and tapped by railroads. The various lines penetrate in every direction, so that the farmer has ready access to market, and every facility for shipping his produce.

Few countries yield as great a variety of products as Southern California. In the list may be enumerated wheat, barley, corn, potatoes—Irish and sweet—and all kinds of vegetables, melons, berries, fruits of every variety found in the temperate and semi-tropical zones, including, in the latter, the orange, lemon, lime, fig, and banana, nuts, the vine, the olive; also honey, wool, meat, fish, petroleum, asphaltum, some coal, and timber. Many others might be mentioned, but the list given will serve to show the wide range.

This wide range of products, together with the regularity of the yearly rainfall and the extensive systems of irrigation, make the country peculiarly exempt from the drawback of dry seasons, such as are found in many sections east of the Rocky Mountains.

A feature to be noted in the agricultural and horticultural products of Southern California is the relatively high valuation to the bulk, and the consequent cheapness of placing them in the markets where consumed. Wheat and barley, which are bulky, take ships in our own harbors for the ports of Europe, having to pay no railway charges over long lines. Corn is turned into lard and bacon at home, and has the whole interior of the mining Territories for a market. Fresh fruits and vegetables of all kinds go by the

train-load to Arizona and New Mexico. Dried and canned fruits, which are produced in large quantities, go directly to Europe by sea. The orange, the lemon, and the lime are shipped by the train-load all over the Pacific coast, and eastward to the Territories and the Mississippi Valley. Raisins have the whole United States for a market. Wool, in excess of the consumption of the factories here, goes by sea to the East and to Europe. Wines and brandies lade in our own ports for all parts of the world. Petroleum has the whole Pacific coast for a market, as no other point has developed it in paying quantities.

The olive is just beginning to show its possibilities as a wealth-producer. It has been cultivated in the old mission orchards for a century, but now a rapidly-increasing acreage is devoted to its culture. So valuable is it deemed in Southern Europe, that the kingdom of Italy alone has fifteen hundred square miles of solid olive orchards.

Commercial Development.

In the earlier days of the Pacific coast, when gold was the one great product, and its quest in the mines the one absorbing pursuit of the inrushing population, trade-lines became fixed in certain channels. Every other industry of the coast was viewed only in its possible relation to the mining interests. San Francisco, as the shipping-point of the mining counties, became, by her location, and by the rapid accumulation of capital, the commercial metropolis of the whole coast. Between the California of that day and the East lay the little-known heights of the Sierra and the Rocky Mountains and the long reaches of almost trackless desert. Instead of the railroads of to-day, were only the scattered trails of the pioneers. Transcontinental traffic was an impossibility, and the ocean became the highway of trade. Everything in the shape of imports for Califor-

nia came by sea to San Francisco, and was thence distributed by sea along the coast north and south. Everything to be exported was gathered in to her wharves by vessels plying in a coastwise trade, and thence reshipped for the commerce of the world. The merchants from all over the coast went to San Francisco to buy their stocks of goods. The banks of San Francisco controlled the finance of the coast. Her commission-merchants fixed the prices of the products of the coast. When men spoke of the commerce of the Pacific slope, they meant the commerce of San Francisco. No other portion of the United States has ever been so dominated by the preponderating influence of one commercial center. It was an exceptional state of affairs, brought about by an exceptional train of circumstances, and could not, in the nature of things, continue indefinitely.

About the year 1875 a great change set in. Like most far-reaching changes in the lines of trade, men were slow to perceive its drift. The merchants of San Francisco were slow to perceive it. Even now, when the trade of the coast has in a measure slipped from their grasp, under the working of laws which must prevent it from ever returning, they scarcely seem to see what it all means.

The long, undisputed monopoly had the effect which it always has, of narrowing business methods and sapping energy. They became provincial in their ways of business. The trade which had to come to them they ceased to strive for. When it no longer had to come to them, they had lost the art of striving for it, and could not meet the keen, wide-awake competition of business centers which began to reach out from the East.

The business men of San Francisco are to-day more ignorant of the drift of business upon the coast than are the merchants of Chicago and St. Louis. A runner of a prominent San Francisco house came into the office of the

writer some months ago, and said he was soliciting orders from the houses here.

"Why," said he, "I am astonished at what I see. *It has been eleven years since our house has had a man here,* and I am astounded at the change!"

That sentence had in it one of the secrets of San Francisco's loss of commercial supremacy upon the coast. I said to him: "Go home. You are too late. Chicago and St. Louis found out years ago that there was a country here, and people, and trade. They have men here every month. We do our trading directly with the East and with Europe. We can lay down our goods here more cheaply than you can yours in your city. We are now wholesaling. Our runners are now selling goods by sample in your city, and underselling your own houses! Go home, and tell your business men they have been asleep for a quarter of a century, and it is now too late. We intend for the future to dispute the trade of the coast with you."

He simply said: "I believe it. I can do nothing here. I am going home by the next train."

A representative of one of the leading San Francisco papers said recently to the writer: "There is no hope of a change in the business methods of San Francisco until the present generation of business men dies out, and new men fill their places."

And the end is not yet. It is only the beginning. The revolution was only hastened by the lack of foresight in San Francisco's business men. Back of it were immutable laws of trade which, had San Francisco possessed every energy and the keenest foresight, would in the end have worked out the same result — only, it might have been somewhat delayed.

What are the facts in the case?

Transcontinental Roads.

Attention has already been called, in that portion of this part which was devoted to the central belt, to certain marked features of the various lines across the continent. It may not be amiss to mention them again.

Both the Sierra and the Rocky Mountain Ranges gradually rise as they go northward, until their highest portions are found between the thirty-fifth and forty-third parallels. This is also the region of the highest mountain-passes, of the deepest snows, and of the severest winter storms. It is the line of the greatest reach of desert, and is the line across the broadest portion of the continent.

Under pressure of the war, and, in fact, as a military measure, and with the assistance of large Government subsidies, the Central Pacific Railroad was pushed across by this line to the Pacific coast. It is probable that even then the line would have been run farther south but for the unsettled state of the country through which it would have had to pass, and the possibility of its seizure by the Southern armies.

Years went by, and other transcontinental lines were projected and built, but they did not follow the central route. Trade seeks, as a matter of economy and profit, the shortest lines between terminal points, the lowest grades, freedom from interruption by storms, and a productive tributary territory through which to pass. It did not find these upon the central route. It found them farther south. It was found cheaper to flank the Rocky Mountains and the Sierra rather than to cross them. And so the newer lines, even when starting from the East, on the central line, were deflected toward the south as they began to make the rise of the continent.

Lines which had crossed the Rocky Mountains found before them the high Sierra, while southward spread the

easy slope of the valley of the Colorado, and then the low passes through the Sierra to the sea. Traffic from sea to sea found only thirteen hundred miles from the wharves of Galveston to the wharves of San Diego or San Pedro, and, instead of the interior desert of the more northern routes, the long, fertile valley of the Gila.

What has been the result? The central line of railroad across the continent has now been finished for twenty years, and in all that time no second line has been built or even proposed over that route. The southern routes, on the contrary, have practically three complete lines: the Southern Pacific, from New Orleans and Galveston, to Los Angeles and San Pedro; the Atlantic and Pacific, which taps the Southern Pacific at Mojave; the Atchison and Topeka, which reaches the sea at San Diego and at Los Angeles; and now the Union Pacific proposes to extend itself by its Southern Utah branch southward along the easy grades of the inner plateau to the sea in Southern California.

One of these roads, the Southern Pacific, after reaching the sea at San Pedro, turns northward again, as a coast-road to San Francisco.

By thus turning southward as they make the rise of the continent, these roads escape the great elevations and the steep grades of both the Rocky Mountains and the Sierra; they escape the deep snows and the severe storms of the winter; they gain, owing to the sharp eastward trend of the Pacific coast in Southern California, shorter lines to the sea

Another and very important gain is made. Instead of traversing for hundreds of miles the non-producing desert-lands of the central route, which can furnish to them little business either in the shape of way-travel or way-freight, they traverse the most fertile portion of the interior of the continent, the high timber and grass lands of New Mexico, and of Northern and Eastern Arizona, and then the long,

fertile valleys of the Gila and the Colorado and their tributaries.

The productive capacity of these valleys has already been described. It is sufficient to add here that, sooner or later, with their almost unlimited area of deep, rich soil, and their practically inexhaustible supplies of water for irrigation, they must contain a dense population numbering into the millions, and with their traffic must furnish a large and profitable way-business to the Southern transcontinental lines.

Looking to the future, the richest and the most populous of all the transcontinental routes from sea to sea will be that which takes in Southern California and these great fertile, interior valleys which lie back of it. With these facts from which to reason, it is not difficult to foresee the future drift of trade. The law of grades, the freedom from snow, the shorter lines, the productive way territory, and the greater aggregate of population, will inevitably draw the transcontinental traffic away from the central to the Southern route.

Even now it is found cheaper to ship freight intended for San Francisco by the way of Los Angeles than to send it across the Northern route by the Central Pacific, and a large portion of her traffic takes this line. With the development of the southern ports and the establishment of steamer lines, the Asiatic and island trade will land at these points, and so save the five hundred miles of extra railroading, and the heavy grades of the Tehachapi on the line south from San Francisco to Los Angeles.

Harbors.

The Pacific coast south of Puget Sound is, by nature, deficient in harbors. The only two good natural ports within the limits of the United States south of that point

are San Francisco and San Diego. Of the harbor of San Francisco it is scarcely necessary to speak; it ranks among the few great seaports of the world. San Diego, less known, is also one of the harbors turned off finished from Nature's hand. A landlocked sheet of water, some twelve miles in length, with a safe, deep entrance, carrying some twenty-three feet at low tide across the bar, it has the capacity to accommodate a large commerce. The California Southern line of the Atchison, Topeka, and Santa Fé road reaches tide-water there. It labors under the disadvantage of lying at the southern edge of the great area of agricultural land of Southern California, and opposite a higher portion of the Sierra, which rises again south of the San Gorgonio Pass.

The greater portion of the shipping of Southern California has, from the time of the earliest Spanish settlement, been done through the port of San Pedro, which lies farther north, and opposite the great body of agricultural lands and the center of population, besides being the port nearest to the low passes through the Sierra. This port, which is the chief shipping-point of Los Angeles, consists of an inner harbor, formerly shut off from the sea by a bar, and an open roadstead, sheltered from westerly winds by Point San Pedro, but exposed toward the south. For many years the business of the port was managed by a system of lighters, the vessels lying at anchor out in the roadstead. A portion of it is still so carried on. Several years ago, the Government, after three careful surveys, entered upon the work of improving the harbor. A breakwater, about a mile and a half in length, was constructed to confine the tide to one channel in its flow across the bar, and the scouring effect of the flow has been assisted by dredging. The channel through the bar, which, when the work was begun, only carried about a foot and a half of water at low tide, has now a depth of some ten feet.

The work of the present season is expected to deepen

this to fifteen feet. It is estimated that the tidal flow will keep clear a depth of from eighteen to twenty feet when it is once opened.

Inside the bar is a ship-channel, several miles in length, with a depth at low tide of from fifteen to twenty-five feet. Many ships now enter—the deeper-draught vessels after partly unloading into lighters—and lie at the wharves to handle their freight. As the bar and the ship-channel are free from rocks, there is nothing to prevent clearing both by dredging to any desired depth. The design, however, of the work is to rest for the present with a channel through the bar of some eighteen feet.

The full plan of the harbor improvement involves the building of an outer sea-wall to inclose a portion of the open roadstead for the heaviest classes of vessels. The surveys have been made for this work, which, when completed, will afford ample anchorage and wharf-room for the deepest-draught vessels and for the needs of the most extensive commerce.

The shipments through this port are very heavy, giving constant employment to a large fleet of steamers and sailing-vessels. In the one item of lumber, one hundred and twenty-five million feet entered through it during the last year. The harbor lies twenty miles south of Los Angeles City, and is its shipping-point. It is the terminal point of the Southern Pacific system of roads.

Some twenty miles north of San Pedro, and sixteen miles west of Los Angeles, is the new port of Ballona, the proposed sea terminus of the Atchison and Topeka system. A line of road has been completed from Los Angeles and is now in operation. Active work is being pushed in the development of the harbor. A channel has been opened to the sea from a large lagoon which extended for several miles just within the sand-beach ; piers have been built upon each side out through the surf ; and the work of dredg-

ing is going on. It is yet a question as to the capabilities of development which the harbor may possess, but the plan is being energetically pushed, and the results so far are very satisfactory.

At other points along the coast are good roadsteads, as at Ventura, and at Santa Barbara, where, through the protection afforded by the channel-islands and projecting points of land, vessels lie at open sea-wharves most of the year with little difficulty.

The effect of the completion of an Isthmus canal, either by the Panama or the Nicaragua route, will be to stimulate in a marked degree the growth of these southern ports. The commerce which now strikes far out to sea in its long voyage around the Horn, because of the wind-currents, and only approaches the California coast as it nears the harbor of San Francisco, will then become largely a coastwise trade, and will pass more under the control of steam; and as the shorter lines will be those nearest the land, it will naturally be tapped first by the southern ports.

The Channel Islands.

Mention has been several times made incidentally of the channel-islands. They deserve more than a passing mention. They are a unique and an important feature, especially in the climatology of Southern California.

The effect which they have upon the climate of the mainland has already been discussed. The climate which they themselves possess has not been considered. Lying only from twenty-five to fifty miles out from the mainland, they yet possess some well-defined differences in climatic features.

Although there are no records to establish the fact, as these islands have been chiefly used for stock-ranges, with only an occasional visit from a party of the owners, and the

transient summer campers who go to enjoy the fishing and in the quest of health, yet if they follow the general law of a diminishing rainfall as the distance from the Sierra is greater, they must have a much less annual precipitation than the mainland. The appearance and type of the vegetation, and the comparative scarcity of springs and running streams, indicate the same fact. They are also much freer from the strong sea-breeze, which reaches its maximum intensity near the shore of the mainland, and also from the fog which forms along the immediate line of the coast. They are bathed in sunshine when the mainland opposite is enveloped in fog. In temperature they are more equable. Life upon them is much like life on shipboard at sea, without the discomforts of a sea-voyage or the attendant sea-sickness.

A very noteworthy fact in their climatology, and one illustrating the effect which the cold current of the Kuro Siwo has upon the northern coast, and which the southern coast escapes by its deflection eastward, and through the shelter afforded by this chain of islands, is the fact that the climate of the outer tier of islands is much harsher than that of those nearer the mainland. The outer islands are nearer the current, possibly within the edge, of that cold northern stream, while the inner chain is surrounded by the flow of the return warm current from the south.

These islands are destined to gain a reputation as health-resorts which will be different from anything upon the mainland. Santa Catalina, twenty miles off the port of San Pedro, has been for years a place of resort during the summer months for parties of campers. The island has one very pleasant feature; midway in its length it narrows and drops down until, instead of the high peaks, only a low sandy isthmus, but a few hundred yards across, connects the two portions. Upon the outer side of this isthmus the heavy ocean-surf rolls in continually, affording the finest surf-bath-

ing. Upon the side toward the mainland there is no surf, only a gentle lapping of the swell upon the shelving sand. The curve of the land makes here a broad, open bay which is so still, and with water so transparent, that at depths of sixty and seventy feet the sandy bottom may be clearly seen, and the fish lazily swimming among the trailing strands of sea-weed.

A small steamer runs across from San Pedro at regular days for the accommodation of the campers, who go over in large numbers. A fine hotel is soon to be erected at this point.

Type of Civic and Country Life.

There are a number of exceptional features in the type of life which is growing up in Southern California. It is a type unlike that found upon any other portion of the coast, and, indeed, with scarcely a parallel within the United States. Most new lands go through the slow processes of a rude pioneer-life before the comforts and the conveniences of a matured civilization are a possibility; and the first waves of population, while made up of the more energetic elements from older communities, are yet not marked by any high degree of cultivation or mental refinement. The class of immigration which has come to Southern California is, in many respects, the opposite of this; it has been made up largely of the best and most highly-cultivated elements of older communities.

Under the old Spanish *régime*, before the Mexican War, when the Anglo-Teuton was yet almost unknown in the land, the country, as headquarters of the Spanish colonial system for the coast, possessed many of the elements of a kindly and refined civilization. It was isolated, little known, slumbering away the years, like some dreary valley of peace. The years came and went, and the restless currents of the

world swept by and left it undisturbed. Yet around the old missions, and upon the broad *ranchos*, and in the quiet *pueblos*, was a kindly, courteous, old-time life, which had in it none of the roughness of the frontier. The writer, coming to Los Angeles twenty years ago, while this old ranch-life was not yet in its decay, wishes here to pay at least a slight tribute to the kindly spirit of that type of civilization which is now rapidly passing away. It had in it nothing of the rush and the drive, of the restless energy which have come with the type which has supplanted it; it possibly had fulfilled its mission, and the times were ripe for something else. Yet it came of a blood as truly and intensely American as that which dates from Jamestown or Plymouth Rock. It is even an older American blood, for it dates from the *conquistadors* and the shores of the Gulf, while yet the Anglo-Teuton had only coasted along the west shores of the Atlantic.

These two bloods share the Western Continent between them. As race-types they have absorbed all others. With a common mission and a common future, they should be friends. They met here, and were friends. The old Campo Santo and the Anglo-Teuton grave-yard hold in their restful sleep hearts that beat as kindly for each other as though no bar of blood or religion ever stood between. The writer has known no warmer friends—none for whom a more tender feeling of kindly regret lingers through the years—than some whose greetings were worded in the courteous speech of Castile.

One face especially comes up from the past with the softened memories of years of personal friendship, and of many a pleasant day spent together in the old ranch-house —the face of Don Manuel Dominguez. It is a face wrinkled with the touch of nearly eighty years, eyes dimmed by age, yet having in them the light of a simple-hearted, honest life.

"Your ancestors," he would often exclaim, when we were speaking of the future of the country, "crossed the continent by one road, mine by another. For nearly three centuries we have between us possessed the land. We are not *estrangeros;* we are Americans!"

As the old man lay dying, he said, gently, in Spanish, thinking, evidently, as his mind wandered, that he was bargaining for some purchase: "I will pay so much; I will pay no more; *I will pay no less,* for that amount is just."

I thought, as I heard him talking, that the remark was typical of the man, and was also typical of that older Spanish life of which he was a lingering representative.

It is to this older, simple-hearted type of Spanish civilization that a wave of Anglo-Teuton blood has come, unlike that which generally first reaches the frontier.

Before the days of transcontinental roads, the distance and the expense of removal were so great that only the more energetic and prosperous portion of the American emigrating element found its way to this far-off region. After the building of the roads, and when the cost of travel was no longer a bar, the fact that there was practically no Government land in the country kept away that element which drifted to the frontier to take up land, and then, after a few years, sell out and move on. Then, the methods of cultivation and the class of products involved time and outlay of capital before much return could be expected, and a higher average of intelligence in the cultivator. Orchards, and vineyards, and tropical fruits involved a style of cultivation and of management very different from the simple farming of wheat, and barley, and corn. The climate, too, as it became more widely known, began to attract the wealthy and cultivated element from all the East.

And so it has been that the emigration to Southern California has been culled out from the choicest of the population of the East. The intelligence, the culture, the

refinement, the energy, the wealth of all the East, have contributed to make up the current which, with each year, is swelling, and will not cease until the land is filled.

The result is already showing in a population which, in all that goes to make up the highest and best type of civilization, can probably not be paralleled elsewhere in America.

If there is any truth in the law of the improvement of race by selection and elimination, and in that other law of the power of climatic surroundings to influence race-development, history shows what the fruitage must be. It was in the analogue of this climate, as found about the east shores of the Mediterranean, that, two thousand years ago, grew up the Græco-Latin civilization which for centuries swayed the destinies of the world, and to-day, after all the ages, still stamps itself upon the mental life of the races. The working of these laws was traced by the writer in an address upon "The Climatic Belts of Civilization."

Education.

The colony system of settlement, which has been so common in Southern California, has borne good fruit in educational work. Wherever one goes, over the country or in villages or towns, the public-school buildings attract the eye at once by their neatness and the creditable style of architecture. The school and the church have gone hand in hand in the work of building up a new civilization.

Good primary and grammar schools are found in the country districts, and high-schools in all the smaller towns and the cities. In efficiency the schools of no State rank higher. A State Normal School, with an attendance of several hundreds, exists in the city of Los Angeles. A large number of seminaries and colleges, under control of various churches, supplements this educational work. Most of these cluster in and about the city of Los Angeles, as the

center of population. The St. Vincent's College, under Catholic control, has been in active operation for many years. The Presbyterian and Baptist Churches have opened out similar institutions. The most extensive and complete, however, of these is the University of Southern California, under the control of the Methodist Episcopal Church. This institution represents in its various college endowment-funds and lands and buildings a moneyed valuation of about two million dollars. It has now in operation the College of Liberal Arts, the College of Music, and the College of Medicine, in the city of Los Angeles, the Chaffey College of Agriculture at Ontario, and the Maclay College of Theology at San Fernando, built and endowed by the Hon. Charles Maclay. It is intended to center at this college especially the work of training workers for the Asiatic, South American, and Mexican church missions. Several more of the colleges will be organized and opened soon. It has also organized, and has partly in active operation, a circle of seminaries and academies scattered through Southern California as adjuncts and feeders to the central university system.

The educational work of Southern California has been planned upon a broad and liberal basis, as it is felt that this is to become one of some half-dozen great educational centers for the United States.

The cool, healthful climate of Southern California and its social advantages will draw to its schools students from the interior Territories and from Mexico, while its advantages as a health-resort are already bringing many students from the Atlantic and Mississippi States.

Political Future.

That California can much longer remain one State is not probable. The project of a division of the State has been

widely discussed, and it is now conceded that the work of separation can not be delayed beyond a very few years. The reasons which are leading to this are based upon causes so deep-seated, and dependent upon geographical and topographical as well as climatic differences so radical, that the union already works serious detriment to the southern portion of the State, and retards its progress.

As a matter of fitness, Northern and Southern California should never have been organized as one State. Only the exigencies of the time so linked them together. Massachusetts and Florida are scarcely more unlike in their needs and political requirements.

The essential differences in topography and climate which divide them have already, but with a different object in view, been discussed in this part.

One other fact has not been especially dwelt upon: Between the two lies a great transverse range of mountains, the lowest passes of which vary from four to five thousand feet above the sea. It is this range, with the absolute division which it makes in the lines of trade and travel, which, more than any other one cause, is forcing them apart.

No two peoples can long be thus separated without becoming, in a measure, strangers to each other. That this is the case in this instance is shown by the ignorance which exists among the people of Northern California with regard to the southern portion of the State. The people of the Atlantic slope know far more of Southern California, and visit it far more, than do the people who, living under the same State government, yet dwell north of the mountains; and the great influx of population which is now pouring into Southern California knows but little about California of the north. Year by year the two peoples are drifting farther apart, and the separation which is already one of sentiment and of trade-lines and business interests, must soon become one of law as well. The

inconvenience of a State so large as the present is also a strong argument in favor of the division. From north to south the State of California, as it now exists, measures over eight hundred miles, a distance as great as from New York to Florida, while its area is 189,000 square miles, or more than that of the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, and Maryland combined.

That a State of this size, and of local interests far more diversified than those of the States just mentioned, can long remain one, is a political impossibility. The only question among the people of the southern portion of the State has been, for some years past, as to the best time to apply for admission into the Union for the new State of Southern California.

Diseases.

Under this heading may be given the diseases which are peculiar to or endemic in the country, and also those which may hope for benefit by removal to it. Southern California is practically free from any diseases which belong especially to it, or have their habitat, as the naturalists say of a plant, in it. Malaria is but little known. Here and there a spot may be found in mountain-cañons, or in river-bottoms not reached by the ocean wind, where malarial diseases exist during a portion of the year, but for practical purposes the country may be said to be exempt from them.

It is the benefit which comes of the free sweep of the ocean-wind to the whole of the land. The breaking down of the Coast Range of mountains, and the consequent openness of the entire system of interior valleys and plains to the sea, have thus had an important bearing upon the healthfulness of the whole of Southern California. Yellow fever is unknown. Typhoid, which has its habitat wherever men con-

gregate in cities, is found to a limited extent; but the purity of the air and the abundance and excellent quality of the water make it a disease not common, nor ordinarily of a violent type. The cool sea-breeze, which gives exemption from fevers, brings with it, however, a certain amount of neuralgias and subacute rheumatisms. Persons with a tendency to these troubles escape by living farther back from the sea. Acute inflammatory rheumatism is seldom seen.

The contagious epidemics of children are found here as elsewhere in the world, but with this difference: that the possibility of more thorough ventilation and of a constant supply of pure, mild air in the sick-room renders them much less violent than in the colder climates and the close houses of the East. The proportion of deaths to the number of cases is much less. Pneumonia and bronchitis are occasionally but rarely found.

Phthisis, the scourge of civilization, will require more time for a complete answer. Yet this much seems to be already clear: that it does not often originate here among families free from a strong inherited taint, while the tendency of physical growth among the young, born and reared in this climate, is to an increased lung capacity in proportion to height and weight, as contrasted with the children of the East; and the clear, ruddy complexion and marked vigor of body point to an increased vitality.

Catarrhal troubles are not common. Apart from the ordinary average of cases induced by excesses, diseases of the liver and kidneys are comparatively rare.

The cases which may hope for benefit by coming to Southern California are, first and foremost, the feeble and invalid from whatever cause; those who find the drain upon vitality in a harsh climate too great for them; who have need to spend a considerable portion of each day in the open air, yet who in their own climate are prevented from so doing by the inclemency of the weather; those

who need clear skies and sunshine ; to whom the refreshing sleep of a cool, bracing night is a necessity after the warmth of the summer day ; those to whose enfeebled digestion or to whose capricious appetites a market stocked with fresh vegetables, fruits, and berries, every month of the year, is of importance. For such, and for all who are suffering from the nervous prostration of overwork, there is probably no better climate to be found. It is a climate in which the drain upon vitality is, with any proper manner of living, less than the gain.

A mistake is sometimes made in the selection of a climate for cases of nervous exhaustion, by sending them to the stimulation of a dry, elevated, interior region. To such cases the first effect of such a climate is like that of a dose of alcohol, the temporary exhilaration of the stimulant, but with the inevitable reaction. For such cases the best climate is one of less elevation and more atmospheric humidity, the climate of a mild sea-coast region. It is not the spurring up of stimulation which they need, but the recuperation which comes of restful climatic surroundings.

While the immediate coast-line with its fogs develops a certain amount of subacute rheumatism and neuralgia, yet such cases coming from the East often improve in a marked degree with the improvement which comes in the general health ; and if they avoid the sea-coast, and live back in the interior valleys, they generally escape such troubles entirely.

Persons suffering from malarial poisoning and its various sequels find in the sea-side life, and the surf-bathing, an almost certain relief. The number of such persons coming from the valley of the Mississippi and its tributaries is increasing rapidly with each year.

The free action of the skin, which comes of the milder climate, makes Southern California the most favorable portion of the Pacific coast for kidney troubles. With such cases in any chronic form the question is rather one of pro-

longing life, and of living in comparative comfort, than of cure. To this end a fair but not excessive action of the skin, freedom from sudden changes of weather and the risk of chill, and the choice of a wide range of diet, are necessary.

In consumption a great mistake is often made. Cases by the hundreds arrive in Southern California which would be much better off at home. No climate can claim to be a cure-all. It should be considered, before starting an invalid upon so long a trip, whether there is strength to endure the fatigue of the journey. Many, too, come without friends or acquaintances, and literally die of homesickness. Many also come who, through lack of means, or through a mistaken economy, rent cold, shady rooms, and live at restaurants, and so missing the comforts of their home-life are worse off than if they had never started. There is also a great difference in localities and local climates, and invalids differ in constitution, and many instead of at once seeking the advice of some competent physician as to the point to be selected for residence, drift around thinking that the country is all alike, and one spot as favorable as another, until much valuable time has been lost and possibly irreparable harm done.

To the consumptive coming before the disease is too far advanced, having the means to secure reasonable comforts, taking steps to select from the first the locality best suited to the peculiarities of his especial case, and then avoiding the common mistake of trying to make a sight-seeing tour of what should be a quiet rest, the climate of Southern California in some one of its varied phases offers a fair hope of check and amelioration to the disease, and of possibly years of comfortable life, and to some even more, an apparent or possibly real recovery. But this will not be by a winter's trip, or spending a few months here, and then returning again to the climate in which the disease originated. It

will be by coming and making a new home. It must not be a trip, but a migration.

The best of all prospects is for the person or the family inheriting the tendency, but in whom it is yet dormant. To them there is a well-founded hope that the disease may remain dormant, and to their children, born and reared in the new home, a prospect of its entire eradication from the blood.

Sufferers from that erratic and torturing disease, asthma, generally secure in some one of the various shades of climate, or in the different elevations which are to be found within a limited area, immunity from the attacks of their remorseless foe.

It is impossible in so limited space to go over the whole list of diseases, but the climatic laws and facts given in this part will enable a competent physician to form an opinion for any especial case.

A pleasant feature of life in Southern California, and one which has much to do with the development of vigorous health, is the custom, which yearly grows in favor, of summering by the sea-side. The long ocean-face of the country is each year, for several months, dotted with canvas villages, where thousands of people live over again for a season, the old tent-life of the race, and, while enjoying the surf-bathing, drink in with every breath of the salt air, the ruddy and rugged health which is born of the sea. Besides these tent-villages there are numerous well-built towns with all the comforts and conveniences of settled society, and with numerous and costly hotels. The railroads from the interior reach the coast at many points to accommodate this summer exodus to the sea-side.

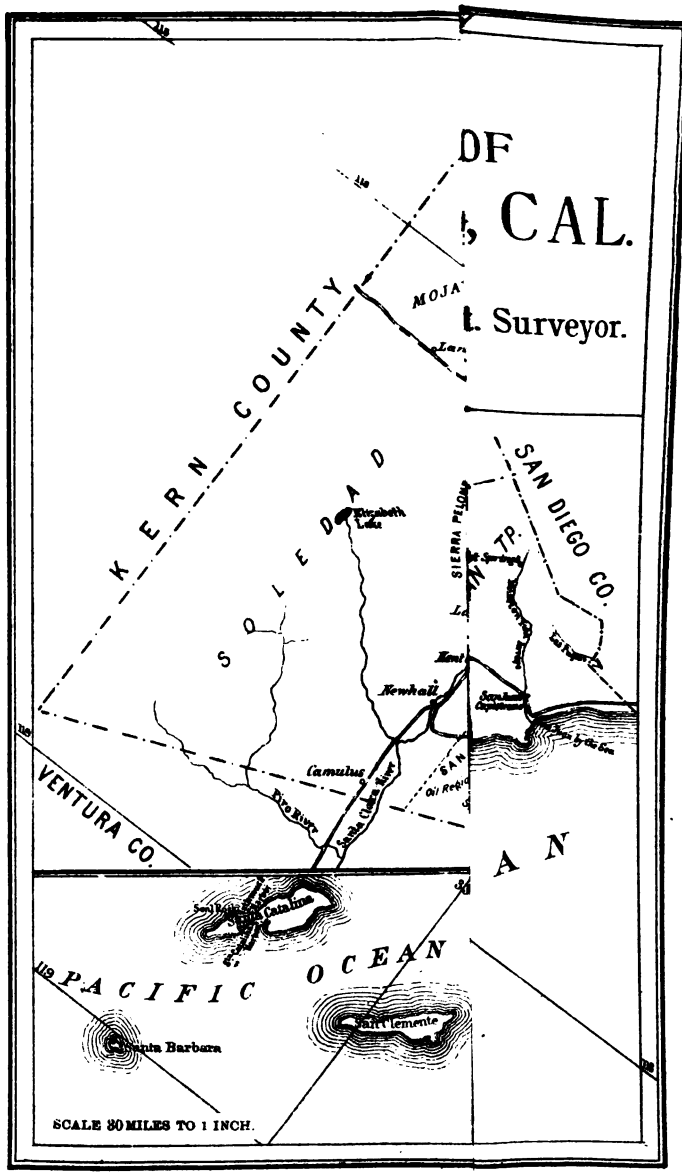
In concluding this part upon the climatology, and some of the allied features of the Pacific coast, the writer would say that the task has been to him a labor of love.

It is a slight tribute which he pays back for the health and the sunshine which, during all these years, it has thrown into his life.

Coming to the coast in boyhood, he has lived its varied life—in the mountains—on its broad plains—by the sea—and upon the deserts of the great inland plateau—until they have interwoven themselves into the very fiber of his being. Why should he not love his land? It has been to him in all these years a thing of infinite worth. He can well understand the love of the old Greek for his sea-girt home.

And he has faith in its future. For a quarter of a century he has taken active part in its growth; has seen it broaden and strengthen, and has seen behind the feverish quest for gold a higher, nobler life growing up, a life that no longer has eyes bent downward to the yellow-speckled slime of the river, but has lifted them up to the eternal mountains, and the deep skies that lie beyond; a life which no longer hears only the jingle of the nugget upon the gaming-table, but has ears growing attuned to the voice of the wind in the upland pines; a life which is learning that there are other and better questions to man's existence than what he shall eat, and what he shall drink, and wherewithal he shall be clothed.

And in this newer and nobler life which is growing up here upon the shores of the Pacific, and upon the highlands of that great inner plateau which reaches on southward to the city of Mexico, it seems to him he can discern the fair promise of a civilization which had its only analogue in that Græco-Latin race-flowering which came to the eastern shores of the Mediterranean centuries ago.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VENTURA CO.
SOLEDAD
SIERRA PELONA
T.P.
Elizabeth Lake
Newhall
Camulos
Piru River
Santa Clara River
Catalina
Santa Barbara
Santa Clemente
PACIFIC OCEAN
SCALE 30 MILES TO 1 INCH.

PART II.

LOS ANGELES, SAN DIEGO, SAN BERNARDINO, VENTURA, AND SANTA BARBARA COUNTIES.

By WALTER LINDLEY, M. D.

The Overland Trip—How to enjoy it.

The health-seeker who, after years of suffering in both mind and body, after vainly trying the cold climate of Minnesota and the warm climate of Florida, after visiting Mentone, Cannes, and Nice, after traveling to Cuba and to Algiers, and noticing that he is losing ounce upon ounce of flesh, that his cheeks grow more sunken, his appetite more capricious, his breath more hurried, his temperature no longer normal, his pulse beating 100 instead of 72, his finger-nails curving ominously, turns with a new gleam of hope toward the Occident.

Another health-seeker who, after years of exciting, exacting work, is unable to concentrate his mind, worn out by sleepless nights, weak from loss of appetite, and distracted by melancholy, also looks toward the equable climate and mild breezes of the Pacific slope for the sedative and restorative effects that medicine fails to supply.

Still another health-seeker, whose joints no longer re-

spond to the mandates of the will, who is harassed and tortured with pains at every change in the weather, looks to the genial climate and the healing waters of the springs of Southern California for relief.

Still, again, we have the wretched sufferer, whose sleepless nights are one long struggle for breath because of an inherited or an acquired asthma, and who also hopes in the varied climates of Southern California to find one that will dethrone the demon which clouds his life.

The questions naturally arise: Where shall I go? What route shall I take? How long shall I be on the way? What will be the expense? What are the accommodations after reaching there? What is best to carry with me on such a journey? What clothing shall I need? Shall I take my family? Are there good schools for my children? What are the means of whiling away the time?

The man with sporting proclivities wants to know of trout-fishing, of the facilities for boating, and of the various kinds of game. The artistically inclined wishes to know of the scenery; the student of Nature is interested in the mosses, flowers, and ferns; the horticulturist desires knowledge of the fruit; the farmer of grain; the dairyman of the creameries and cheese-factories; the physician of the prevalent diseases, the wind, altitude, temperature, rainfall, and humidity. It is to answer these questions that this book is written.

The west-bound tourist should supply himself with lunch enough to last four days. He should have an abundance of canned fruit, jellies, boneless chicken, meat, butter, and condensed milk. He should have a spirit-lamp and be prepared to make his own tea or coffee; he should carry eggs, salt, and pepper. Take all of these things, and try to get along without eating any of them. There are excellent eating-stations along all the various routes, but trains are apt to be behind time, and frequently the traveler who has not pro-

vided for himself must wait until eleven or twelve o'clock for breakfast or till midnight for his dinner. The suggestion of Rev. E. P. Roe,* author of "Barriers Burned Away," that the overland roads furnish tea, coffee, and sandwiches when trains are delayed is a good one, but nevertheless a lunch-basket is a great desideratum. It is, on the whole, much better for health and comfort to eat at the stations and get freshly-cooked food whenever the railway eating-stations are reached at reasonable hours.

The traveler should always carry something with him to guard against constipation. A sedlitz-powder, a teaspoonful of Rochelle salt, or a tablespoonful of Hunyadi Janos taken before breakfast, is a simple and efficient preventive. A bottle of paregoric, a bottle of aromatic spirits of ammonia, and a flask of good whisky, are all excellent things to carry in the satchel. If you do not need them, some fellow-traveler will. The sensible transcontinental traveler throws aside unnecessary conventionalities, and in twenty-four hours becomes well acquainted with every occupant of his Pullman. Elderly ladies and children generally are the earliest passengers to start the social ball rolling.

On one transcontinental trip, in the writer's experience, all were having a jolly good time except one man, whom the others called the mute; but on the third day a cup of good tea from a good-hearted old lady caused his stolidity to vanish like a heavy mist before the noonday sun, and he then became one of the family.

In another car there was a solemn-looking man from San Francisco and a mischievous little three-year-old girl from Los Angeles. This little girl's mamma was in a constant tremor, thinking of the terrible consequences should her little girl annoy the sedate gentleman. One day she relaxed her vigilance, and, on looking up, was terror-stricken to see

* Letter from Los Angeles to Chicago "Inter-Ocean."

her child standing on a seat back of this man and with a string around his neck was crying in childish glee, "Get up, horsey!" The mother ran to the man with apologies; but he soon quieted her fears by telling her that the man who didn't like children ought to be shot, and from that time on he joined in the social diversions of the trip.

A few months since on the same train were the Rev. Samuel Scoville, son-in-law of Henry Ward Beecher, and Rev. Charles B. Sumner, also a New England clergyman, and these preachers and their families entered heartily into the pleasures of the trip. When Sunday came, the train was passing through the grand pine-forests of Arizona, and there in one of the Pullman's, passing under the branches of "God's first temples," services were held. The clergymen conducted the exercises. Familiar hymns were sung, and brief remarks were made by several. Among others a spiritualist spoke, and said that he had abused the Church frequently in the past, but, after listening to these services, he felt like taking it all back. Thus, incongruous people become pleasant and mollified.

During such a trip cards, books, newspapers, and illustrated papers are always in demand. A young man with a violin, or a young lady with a guitar and a sweet voice, is a great acquisition to any party.

The four days' ride from Kansas City, New Orleans, or Omaha, is either dull, monotonous, and desolate, or cheerful, exciting, and instructive, just as each passenger elects.

The social man will gain much knowledge of the country he will traverse by conversing with his fellow-passengers.

The Arrival in Southern California.

But we will now suppose the journey across the great republic is completed, and the traveler is in Los Angeles, the central city of Southern California.

If you arrive after 11 P. M., remain in the sleeper until morning. Thus you will have a good night's sleep. By six o'clock in the morning numerous carriages will be at the train, with drivers vociferously claiming the privilege of carrying you to a hotel. Should you be fortunate enough to have friends whom you expect to visit, be sure and telegraph them the time of your arrival and what route you will travel. Inform your friends that, if the train arrives at night, you will remain in the car until morning. The most dismal courtesy imaginable is to wait around a cheerless depot from hour to hour through a chilly night in what Dr. Hammond calls an "abnormal state of uncertainty," expecting friends on a delayed train.

If you have no hospitable friends in Los Angeles, decide what hotel you are going to before you arrive; and, in fact, it may save you trouble and annoyance to have written and secured accommodations before you left home.

By having these questions settled, you can have your baggage checked to your hotel or boarding-house before you arrive in Los Angeles, and thus avoid the risk of delivering it to irresponsible carriers. The cars of several street railway-lines pass the depots and hotels at intervals of five minutes. Fare, five cents on all lines.

Prices in hotels and boarding-houses range from one to four dollars per day. Day-board at restaurants averages five dollars per week. A wholesome and well-served meal, including meat, coffee or wine, and dessert, may be ordered at a restaurant for the small sum of twenty-five cents.

A Century in Los Angeles.

Los Angeles is not a new town like Kansas City, Omaha, or Minneapolis. It was a thriving *pueblo* when the Franciscan Fathers established a mission here in 1781. On account of its beautiful location midway between the mount-

ains and the sea, its delightful climate, and the fertility of its soil, it was named *Pueblo de la Reina de los Angeles* ("Town of the Queen of the Angels").

Forty-one years later the first American, a man named Chapman, was brought to Los Angeles. He came as a prisoner of the Mexicans, but soon fraternized with them, and afterward married into a Spanish family. Many similar marriages—i. e., American men to women of Spanish descent—have taken place in Southern California, and, as a rule, they have proved very happy. There are in Los Angeles to-day numerous young men of prominence and promise who have Castilian mothers and American fathers.*

In each of these marriages there was the stipulation that the woman should control the religious training of the children; and, even from a Protestant standpoint, a fortunate proviso this was, because up to 1854 the only organization in Los Angeles upholding any standard of morality whatever was the Roman Catholic Church. It erected houses of worship, hospitals, and schools; it was the pioneer in all good works.

In 1824 a Scotchman came to Los Angeles and opened the first general store on the American plan. In 1831 the opening of the Sante Fé trail created a new outlet to the East, and was the means of developing an extensive trade.

In 1835 Los Angeles became the capital of California. Hostilities between the United States and Mexico having been precipitated, and the Mexican War inaugurated, Commodore Robert Field Stockton† and Major John C. Fre-

* The writer has never known, although there are probably exceptional cases, of a Spaniard or Mexican of this section marrying an American wife. Instances are not rare where Americans have married Indian wives, and these unions have also proved surprisingly happy.

† Afterward United States Senator from New Jersey.

mont, on August 13, 1846, marched into Los Angeles and raised the Stars and Stripes.

Don Pio Pico, who was then Governor of California under appointment from the Mexican Government, had left the night before on a tour through what is now the southern part of Los Angeles County. Governor Pico is still a resident of Los Angeles, and any Angeleño will cheerfully point him out to the inquiring stranger. The Governor is eighty-seven years of age, yet he has great vitality, and bids fair to be a centenarian. Although he still thinks that the capture of California by the Americans was an unjust and ambitious scheme of an "astute enemy," yet he has overcome his repugnance to such an extent that he is now a registered voter, and casts his ballot with as much regularity as though he had been born in Massachusetts or in Virginia.

Fremont and Stockton went north, leaving Lieutenant Gillespie in charge with but seventeen men. There was soon a general revolt under Captain José Maria Flores, and, in the latter part of September, Lieutenant Gillespie, after being in a state of siege for several days on Fort Hill,* surrendered Los Angeles to the Mexicans on condition that he and his men be permitted to march unmolested to San Pedro. The handful of men was taken on board the merchant-ship Vandalia. On January 10, 1847, Commodore Stockton and General Stephen W. Kearny recaptured the town, and on the 14th Fremont joined them with his forces after effecting a treaty with the Mexicans under General Andres Pico at the Cahuenga, a beautiful mountain-pass eight miles from the city.

On January 16, 1847, Fremont became Governor of California, establishing his headquarters in the two-story adobe building yet standing at the corner of Aliso and Los Angeles Streets. This building was at the time the best

* Fort Hill is a point in Los Angeles well worth visiting.

in town, for, as one old settler said, "Fremont always would have the best of everything." Fremont remained in Los Angeles until March 22d, when he took the famous mustang-ride with Jesus Pico and Jacob Dodson to Monterey, five hundred miles away. During this trip the dashing young officer averaged nearly one hundred and twenty-five miles a day, for the round trip of a thousand miles, being absent from Los Angeles just eight and one half days.

About this time the seat of government was removed to Monterey, and Kearny, in accordance with instructions from Washington, became Governor. On April 7th, Colonel Mason superseded Fremont as commander in Los Angeles, and May 9, 1847, General Kearny arrived and took command, and three days later Fremont left for the North.

Hon. S. C. Foster, one of the early mayors of Los Angeles, a resident of this city since 1847, gives many interesting reminiscences of Fremont's residence in Los Angeles. Mr. Foster was a member of the California State Senate when Fremont was a candidate before that body for re-election to the United States Senate. He says that he voted for Fremont one hundred and thirty-five times and that finally the Legislature adjourned without an election. Mr. Foster states that he was not voting so much for Fremont as he was for Senator Thomas H. Benton, Fremont's father-in-law, as he thought it would be the same as giving Benton two votes!

The first Protestant preacher in Los Angeles was Rev. J. W. Brier, of the Methodist Episcopal Church, who arrived here in 1850, his entire earthly possessions being contained in the ox-team which he drove. He held the first service in the adobe residence of Colonel J. G. Nichols, where the court-house now stands. Little did he reck that in 1887 his denomination would have nine churches and a collection of massive university buildings in this city. The first mayor of Los Angeles was elected in 1850. The first

brick house was erected, at the corner of Third and Main Streets, in 1852. This building was one story high, and, in 1859–'60, was occupied by Captain Winfield S. Hancock. This young military officer was very popular in Los Angeles, and when he became a candidate for President, many Republicans of this vicinity found the ties of friendship stronger than party ties and openly supported their hero. A few years before his death General Hancock visited Los Angeles and received a great ovation. The first English-speaking school was taught by Rev. Dr. Wicks in 1850. The first American child born in Los Angeles was Gregg Nichols, who saw the light of day April 15, 1851. The first newspaper was born May 17, 1851, and was christened "The Los Angeles Star."

In 1853 there were three dry-goods stores. In 1854 the population of Los Angeles was four thousand, of whom but five hundred were Americans.

In 1854 the first Masonic Lodge received its charter. The same year, in September, the first hive of bees was brought to Los Angeles. It had been purchased in San Francisco for the sum of one hundred and fifty dollars. The same year a tannery was established. In 1855 bull-fighting on Sunday was stopped. During the same year the first Odd-Fellows' Lodge was organized.

Although Judge Lynch had indulged in a few executions, the first legal hanging occurred in Los Angeles May 30, 1856. A few years later an atrocious murder was committed, and the murderer lodged in the Los Angeles Jail. A mob, thirsting for his blood, gathered around the jail, when Colonel John F. Godfrey, an able and popular lawyer, mounted the steps in front of the jail and readily gained the respectful attention of the would-be rioters. "Gentlemen," he said, "the widow of the murdered man is left in poverty and with a large family of children. I know you all sympathize with her deeply." (Approving responses.) "Then I will ap-

point four men to go through this audience and take up a collection." The shrewd colonel then appointed several of the ringleaders to take up a collection, and the result was that the sight of the contribution-box dispersed that mob quicker than it could have been done by a battalion of soldiers.

In the fall of 1857 the citizens of Los Angeles sent the Hon. H. D. Barrows to Washington with a barrel of old port wine, two cases of white and red wines, some choice varieties of brandies and angelica wines, and a great variety of oranges, lemons, almonds, citrons, English walnuts, and grapes, as a present for President Buchanan. United States Senator Gwin was a passenger by the same steamer, and voluntarily proffered to present Mr. Barrows to the President.

Mr. Barrows, in conversation recently, said he found the President a very courtly elderly gentleman. He received them with quiet cordiality and made many inquiries about California and especially about Los Angeles, which at that time was almost a *terra incognita* to the people of the Atlantic States. President Buchanan thanked Mr. Barrows particularly for the wines, and said, with a twinkle in his eye, that he "claimed to be a good judge of wine." Senator Gwin, on the same occasion, gave the President a bottle of very old California grape-brandy.

In 1858 Lieutenant Beale (now General Beale, of Washington) brought a number of Arabian camels to Los Angeles, believing they would prove profitable as beasts of burden. The experiment proved a failure, and the animals were finally sold to a circus company.

In 1860, the population of Los Angeles was four thousand five hundred, and the first telegraph line was constructed. In 1867 a castor-oil mill and gas-works were established. In 1868 the Los Angeles City Water Company obtained a franchise, and the first railroad was built. The road was twenty-

three miles long, and united this city with the harbor at San Pedro.

In 1871 there occurred a disgraceful riot, in which eighteen Chinese were killed. The same year the first fire-company was organized and at once entered upon the arduous duties of controlling the city's politics.

The first woolen-mill was established in 1872, and the Public Library was founded in 1873. In 1874 the first fruit-drying establishment was established, on an extensive scale. The year following a broom-factory and artificial-stone works began operations.

In 1876 Los Angeles had a bank failure, a drought, and the small-pox. The only silver lining to this cloud was the completion of the Southern Pacific Railway from San Francisco, thus giving Los Angeles for the first time railway communication with other cities. Railways were soon built to the sea-shore at Santa Monica, sixteen miles away; to Santa Ana, in the rich Santa Ana Valley, thirty miles away; and ere long the Southern Pacific Railway was extended directly east through Arizona, New Mexico, and Texas, to New Orleans.

On October 6, 1880, the College of Letters of the University of Southern California was formally opened, with a large attendance. The Rev. M. M. Bovard, its first president, is still at the head of the university, which is the outgrowth of the college.

September 5, 1881, Los Angeles celebrated her centennial anniversary with great enthusiasm. Over thirty thousand people were in procession. The Mexican population took an important part in these ceremonies. Thousands of them were in line, on spirited horses. There was a Mexican *carita*,* drawn by two oxen, a carriage containing two Mexican women, aged respectively one hundred and three

* A primitive two-wheeled cart, with solid, hewed wheels.

and one hundred and seventeen years, and many other features peculiarly Mexican.

During this same year the first four-story block was erected, the owner being Remi Nadeau, who made his advent in Los Angeles in early days as the driver of an ox-team. In 1882 the State normal-school building was erected, and during the same year the United States Magnetic Observatory—the only one in the country—was removed from Madison, Wisconsin, and established in this city. A still more important enterprise was the inauguration of an elaborate system of electric lights. The city is now lighted by about one hundred three-thousand-candle-power arc-lights, supported by about twenty-five high towers. No other city in the world surpasses Los Angeles in the matter of street illumination.

In 1884 Mademoiselle Rhea appeared in "The School for Scandal," in the dedication of the Grand Opera-House. The first cable of several street-railways was also built during this year. But we will cease the enumeration of the many important events which have taken place in Los Angeles during these last few years, as we have already in this brief historical outline recounted enough data; so that the reader may understand that, while Los Angeles is over a century old, yet it is, at the same time, a comparatively new town. It is old as a picturesque, sleepy, free-and-easy, Spanish *pueblo*, but new, as a thriving, progressive American city; old, as a center for an extensive grazing country—new, as a distributing commercial mart; old, as a station where the solitary horseman stopped for rest and refreshment—new, as a railroad center, where nearly a hundred loaded trains daily discharge their passengers and merchandise; old, as a Catholic mission, where the noble-hearted, self-sacrificing priests, under the beneficent guidance of Padre Junipero, held sway—new, as a cosmopolitan city, where a hundred Protestant churches vie with the

cathedral chimes in directing the thoughts of man heavenward.

But the old has not entirely passed away. Many of the one-story adobe buildings still remain. Especially in that portion of the city known as Sonora-town several thousand descendants of the old Spanish families, who in their wisdom founded Los Angeles, are yet among us to claim the credit due their race.

The distinguishing virtues of the Spanish-American population are charity and fidelity. Go to our county hospitals and almshouses, and you will look in vain for the Mexican or Spaniard.

The German and the Irishman are there; the Englishman and the Frenchman are the county's wards; the African from Mississippi and the American from Virginia sit side by side at the pauper's table; but the Mexican and Spaniard will share his last crust with a distressed countryman. The ties of kinship are not necessary to call forth from a Mexican the last dollar for a common fund. He who would criticise these descendants of early settlers for their lack of thrift, their impulsive tempers, and their ways of idleness, could, by looking a little closer, learn of virtues that would make the average American blush for his own race.

But this Spanish population is rapidly disappearing. Death and emigration are removing them from the land. During the first half of this century they were noted for health and longevity. They spent their days in the saddle and their nights in sound sleep in well-ventilated houses, or wrapped in a *serape*, with the faithful stars watching over them. Their diet was fresh meat or game; their drink, water, milk, and claret. These healthful habits have all changed. They no longer have unnumbered horses to ride and vast herds of sheep, from which one for a meal would never be missed. Their broad acres now, with few

A Veranda in Los Angeles.

exceptions, belong to the more acquisitive American or Hebrew. Grinding poverty has bred recklessness and moroseness. Simple healthful amusements have in many instances given way to midnight carousals, and long-continued dissipation and want are huddling them together in the most unwholesome localities in the city.

But upon this dark picture the morning light is breaking. Here and there the scion of some old Spanish family is distinguishing himself as a statesman, an attorney, or a business man. The reader has doubtless seen a merchant who had been regarded as a financial leader suddenly succumb to some irresistible disaster; for years after he would appear to be irretrievably crushed, and then gradually he would recover his former ability. The keen light of intelligent activity would again shine forth through the lusterless eyeballs, and ere long this disheartened man would mount up to achievements he had never before dreamed of. So to-day we see, springing from the loins of these Spanish families, who have been so ruthlessly crushed to the earth, ambitious, industrious, brilliant young men, some one of whom may prove to be the guiding star that will yet lead his fellow-countrymen to a position which this race has not known for decades.

The Los Angeles of To-day.

The Los Angeles of to-day is a rapidly-growing city of nearly seventy thousand inhabitants. The Los Angeles River, a turbulent stream in winter and a beautiful creek in summer, runs through the city. This stream, according to an old Spanish grant, belongs to the city from its mountain source downward. The municipality includes a large irrigating system, the water for which is brought from this river. The irrigating ditches are called *zanjas*, and the superintendent of them is the *zanjero*. The city limits

comprise an area of thirty-six square miles, and every vineyard and orchard within these limits receives its water-supply from the city system.

Orange-groves need irrigating about once in six weeks, from the 1st of May to the 1st of November. Vineyards do not need nearly so much water, and in many sections of Southern California, after the vines are once rooted, they need no irrigation. Heretofore the water has been carried in open ditches, but latterly a system of cement pipes has gradually superseded the open zanjas. To supply this water the city has two reservoirs—one, in East Los Angeles, having a capacity of 150,000,000 gallons; the other, on the line of the Temple Street cable railway, with a capacity of 700,000,000 gallons. In addition to the reservoirs, five large ditches tap the river, bringing their supply directly to the city zanjas.

The city sells this water at two dollars per head per day, or one dollar and a quarter per head per night. The head of water is equivalent to about one hundred inches.* Mr. E. H. Dalton, the Los Angeles zanjero, says that this head of water, properly used, will irrigate eight acres of orange-trees in twelve hours, and is equivalent to a rainfall of three and a half inches. Six times annually insures a healthy growth to orange-orchards, and three times a year suffices for vineyards. Consequently, an eight-acre orange-grove requires seven dollars and a half worth of water, if irrigated at night, or twelve dollars' worth per year if the irrigation is done in the daytime, while an eight-acre vineyard will require but half this amount.

The water for drinking and domestic purposes is brought

* An inch of water is the quantity that will flow through a hole an inch square in the side of a box four inches below the surface of the water in the box. Fourteen thousand gallons will flow through this opening in twenty-four hours; consequently, a head of water for twenty-four hours gives fourteen hundred thousand gallons.

from the head-waters of the Los Angeles River in the Sierra Madre Mountains, and is supplied through an entirely different system. While the irrigating system is owned by the city, the house supply is owned by two corporations—the Los Angeles City Water Company, and The Citizens' Water Company. The former supplies the principal part of the city, the latter furnishing water for the residents of the hills in the western part of the city; only the water-rates are regulated by law, being one dollar and a half per month for an average residence. There are also many wells within the city limits, water being reached at a depth of from twenty to eighty feet. The water from these wells is usully pumped by windmills.

What to see in Los Angeles.

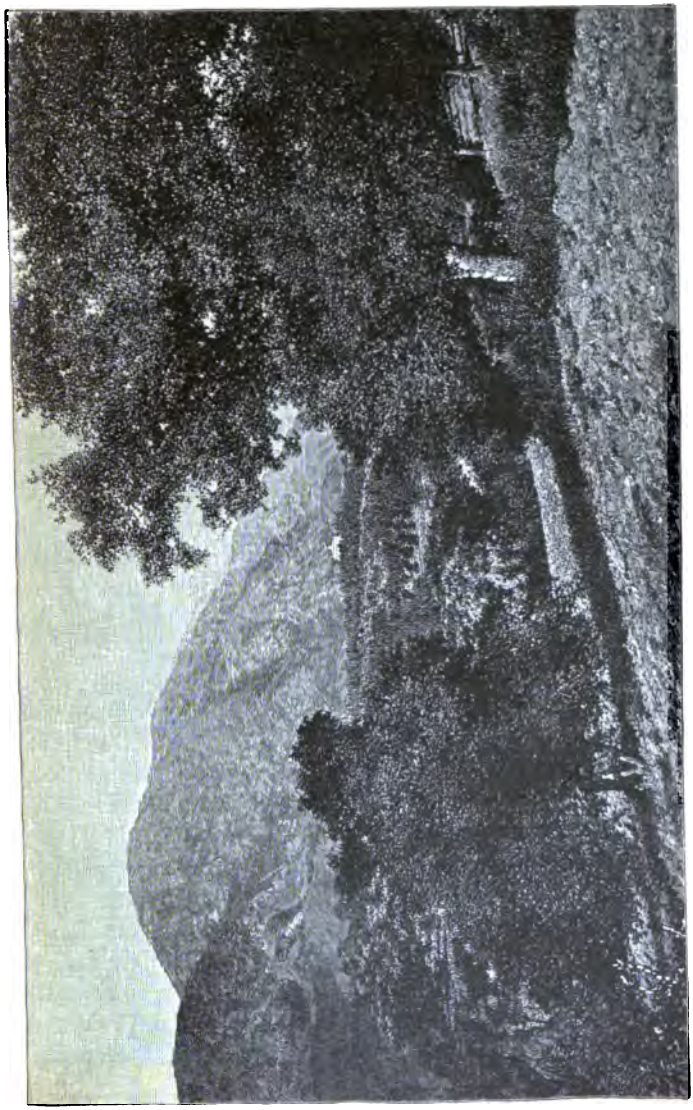
The tourist who has leisure will be well repaid by visiting one of the open zanjas in the suburbs, where the Mexican population is numerous, and watch the señoras doing their weekly washing. The *tomale* man is another Mexican feature, who is very similar to the hot-corn hawker of Eastern cities. The *tomale* consists of green corn mashed and mixed with chicken, olives, *chilé* (red-pepper), and numerous other ingredients, all wrapped in a corn-husk, tied at the end, and furnished hot. It is really a delicious morsel.

If the tourist desires a genuine Mexican meal, he should go to Illich's—an old-time Los Angeles restaurant—and order a regular "Spanish breakfast."

Los Angeles is midway between mountain and sea, being fourteen miles from each. It is also midway between Santa Barbara and San Diego—the former being one hundred miles northwest, the latter one hundred miles southeast. The altitude of the city varies from three hundred and fifty to five hundred feet. Much of the residential portion

is built on hills that are traversed by cable street-railways, by which it can be easily reached on payment of a five-cent fare. No visitor should miss the ride over these hills, and the bird's-eye view of the city and valley. A satisfactory plan is to get on the cable-car at the corner of Second and Spring or Second and Fort Streets, and ride to Grand Avenue or Bunker Hill Avenue. Then, by walking two or three squares to the southwest, a beautiful panoramic view of the city greets the sight. Then, taking the cable-car again, ride to the terminus of the line. After viewing the mountains, ocean, and valley from that vicinity, walk two squares northward to Temple Street, and there take a car on another cable line. Returning to Bunker Hill Avenue, walk one square south to Court-House Street, and then three squares east on Court-House Street to Hill Street, where a magnificent view of the city and its environs can be obtained. From this point, away to the south, a chain of hills on Catalina Island, thirty miles out at sea, is spread upon Nature's canvas in panoramic splendor. After lingering at this point for a while, and, if possible, watching the sun as it goes to rest in its ocean-bed, the tourist should walk down the stairs directly in front of him on Court-House Street. These will lead him to Fort Street, between Temple and First, at a distance of about two squares from the leading hotels.

In architecture, Los Angeles presents every variety, from the quaint adobe of the Spaniard to the four-story brick or stone building of a modern type. There is a noticeable preponderance of one- and two-story buildings. The first three-story building was erected but a few years ago, and there are now only about a half-dozen four-story structures. For homes, the popular building is the rose-embowered cottage. These beautiful cottages, surrounded by well-kept lawns, with hammocks swinging on verandas or under pepper-trees, and with fuchsias, heliotropes, and



Kinneyloa Ranch, thirteen miles east of Los Angeles.

roses clambering to the roofs, are the choice of many wealthy people. Mechanics and even day-laborers here easily have homes that delight the artist's eye.

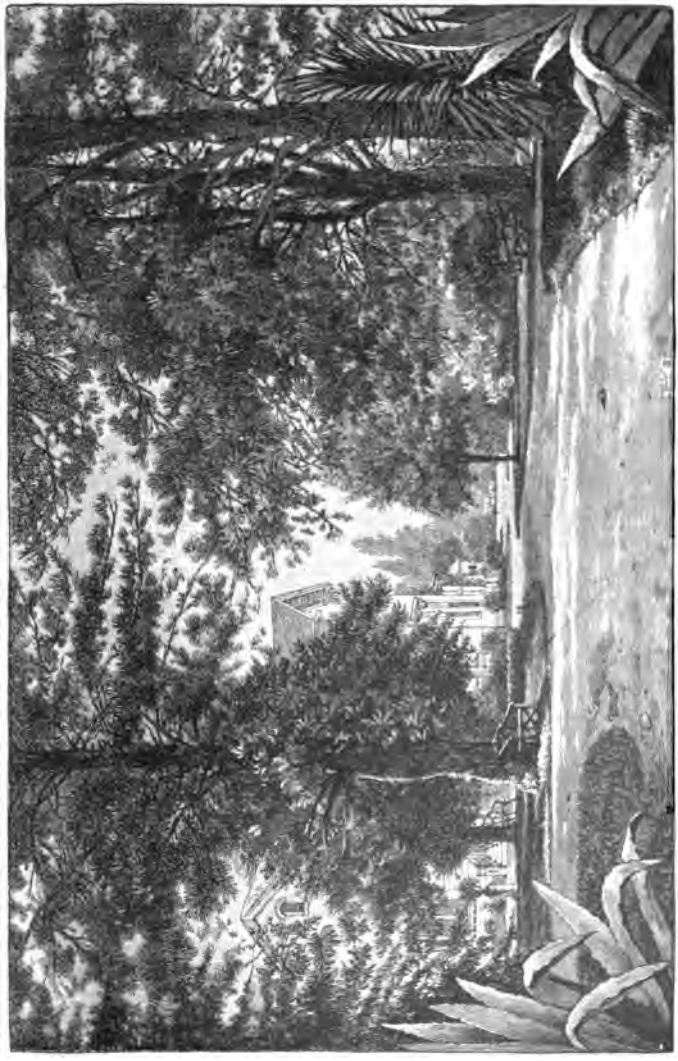
Yet there are many handsome structures. The most noticeable business buildings are the Baker Block, North Main and Arcadia Streets; the Clinton Block, Main and New High Streets; the Times-Mirror publishing-house, Fort and First Streets; the Fort Street bank-building, Fort and Second Streets; the Phillips Block, Spring and Franklin Streets; the Nadeau, Spring and First Streets; the Callaghan, Spring and Third Streets; and the bank-building corner of First and Spring Streets.

The places of amusement are the Grand Opera-House, a fine structure on South Main Street, near First, that can be easily reached by any street-car line; and Hazard's Pavilion, corner of Olive and Fifth Streets, an immense structure, seating several thousand people. All the street-railway lines pass within one or two squares of it. The Turn-verein Society has just erected a three-story brick building on Spring Street, between Second and Third Streets, which will contain a large concert-hall.

There is a Chinese theatre on Alameda Street that should be visited by every tourist. It is but a few steps from the Pico House.

Washington Gardens, a large park at the corner of Main and Washington Streets, is another pleasure resort. The principal attraction of the gardens is the zoölogical department, containing, among other features of interest, a large number of ostriches. The gardens are reached by the Main Street line of horse-cars.

The Second Street Park and Zoölogical Garden are on the line of the Second Street cable-road. It is a pleasant place to spend an hour. The Agricultural Park and race-track are at the terminus of the Main Street line of cars.



Residence and Grounds of O. W. Childs, Esq., Los Angeles.

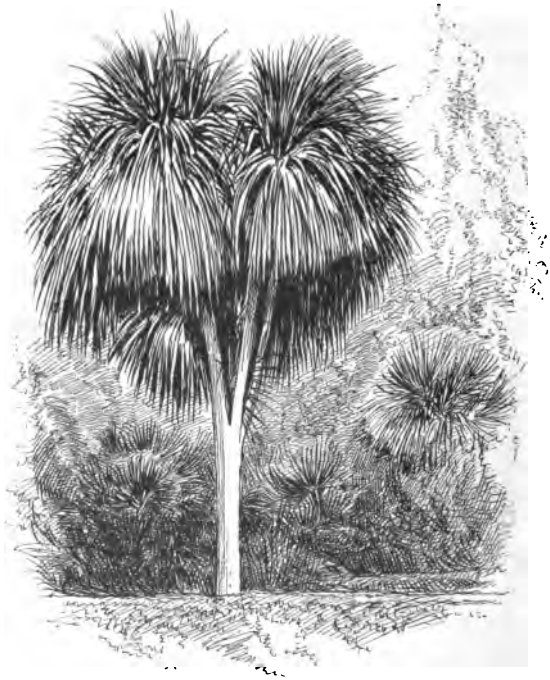
Residence of Hon. Charles Silent, Adams Street, Los Angeles.

In fact, a pleasant day's trip for the tourist with leisure is to take the Main Street line of cars in the morning, stopping first at the corner of Eleventh and Main Streets to see the beautiful home and extensive grounds of O. W. Childs. Taking the car again to Washington Gardens, spend an hour there among the orange-groves, vineyards, and the ostriches. By a car of the same line continue the trip to the corner of Ellis Avenue and Figueroa Street. Here is a delightful walk through Ellis Avenue, past the Marlborough Hotel, to Adams Street, and then down Adams to Figueroa Street, visiting the gardens of Hon. Charles Silent and the Longstreet Place. Tourists will receive much kind attention if they do not neglect the ordinary courtesies expected from people of good-breeding; but it may not be amiss to add that an unwarranted or unseasonable intrusion upon strictly private property is apt to be summarily resented. This should be especially remembered in visiting the Spanish-American part of the city.

At the corner of Adams and Jefferson Streets, again, take a Main Street car to the University of Southern California. After visiting this institution, proceed by a car of the same line to the Agricultural Park, where a basket-lunch under the shade of the pepper and eucalyptus trees, or a warm lunch at the restaurant, will be appreciated. On the return trip take a Jefferson Street car of the same line; this will carry you to the center of the city by quite a different route.

A day's ride on the "bobtail" car will take the tourist through miles of orange-groves and vineyards, through avenues of palm-trees, whose great, broad fan-leaves cast a heavy shade across the street, and past scores of elegant villas surrounded by gardens which contain at all seasons of the year a wealth of flowers. Such a trip will lead the visitor to feel that he has reached a new world. The foliage is all different from that with which he has been familiar in his

Eastern home. Even the plants he is accustomed to see in his native place will have reached such an exaggerated growth that they look like strangers.



Dragoon Palm.

East Los Angeles is a beautiful portion of Los Angeles, and is on the east side of the Los Angeles River. The two-horse-car line is the best means of reaching this part of the city. Boyle Heights is another delightful suburb. It can be reached by the Aliso Street railway, whose cars start from the junction of Spring, Main, and Temple Streets.

Every visitor should take a ride on the electric street-railway that starts from the corner of First and Los Ange-

San Pedro Street, Los Angeles.

les Streets. There is a neat little waiting-room here. Trips are made every fifteen minutes. Fare for a ride of three miles, five cents. This is said to be the most successful electric railway now in operation.

Almost all of the leading theatrical and musical attractions visit Los Angeles every year. During the past season there have been Booth, Langtry, Ward, Modjeska, and a host of others of more or less note, in drama; while in opera, Patti, Emma Abbott, the National Opera Company, and many other musical celebrities have visited the city.

The Los Angeles Crematory.

Los Angeles is not behind other cities of its size in regard to cemeteries, of which there are five. The Roman Catholic Cemetery is beautifully located on an elevation on Buena Vista Street, just overlooking the Southern Pacific depot. The City Cemetery is situated on Castellar Street, between Bellevue Avenue and Sand Street. The Hebrew burying-ground is on Reservoir Street. These three are old cemeteries, and are near the center of the city. They will doubtless soon be closed. Chief among the new places of sepulture is Evergreen Cemetery, on Aliso Avenue. It is reached directly by the First Street and also the Aliso Street railway; all other lines transfer passengers without charge. The Rosedale, on West Washington Street, can be reached by the electric railway, which can be taken at First and Los Angeles Streets. At the Rosedale Cemetery there is the only crematory in the United States west of the Rocky Mountains. It was built by the Los Angeles Crematory Society, under the supervision of an expert who came for that purpose. The first incineration took place June, 1887. The body, which had been regularly interred a few months previously, was that of the wife of Dr. O. B. Bird, a prominent homœopathic physi-

cian. The cremation was a complete success, and attracted as much attention as the most sanguine friend of the movement could have wished. Dr. Bird took his wife's remains, now reduced to a few ashes, in a little package and went a short distance out to sea, where he cast them solemnly upon the breast of the great Pacific. The boatman whom Dr. Bird had employed was very much excited at such a mysterious manœuvre, and with some friends returned to the spot and did some fruitless dredging. H. Sinsabaugh, D. D., a prominent member of the Methodist Episcopal Church, is President of the Cremation Society, and Dr. William Le Moyne Wills, Professor of Anatomy in the Medical College of the University of Southern California, is Secretary. Dr. Wills is a prominent Los Angeles surgeon, and inherits his enthusiasm for cremation—his grandfather, Dr. F. Julius Le Moyne, of Washington, Pennsylvania, having constructed at his own expense the first cremation-furnace in the United States.

Los Angeles a Cosmopolitan City.

Los Angeles is cosmopolitan. Almost every nation under the sun is represented. The genuine American, who talks plain English with Yankee modifications, is the controlling element wherever he asserts himself, but there are also many foreigners here. One of the best foreign elements is the Irish. While Eastern cities complain of ignorant Irishmen, Los Angeles can boast that many of her most intelligent citizens are from the Emerald Isle. Hon. John G. Downey, an Irishman who resides in Los Angeles, was one of California's most noted Governors, and is one of the founders of the University of Southern California. Hon. E. F. Spence, President of the First National Bank, another Irishman, was recently Mayor of Los Angeles. A year ago he gave ten thousand dollars to the University of Southern California ; and last June, as he was leaving on a European

tour, gave his check for fifty thousand dollars to the same institution, with which to found an astronomical observatory. There are Irish lawyers, Irish clergymen, Irish doctors, and Irish merchants, who are a credit to the land of their adoption.

Of Germans there are many. They support an excellent daily paper, and rank among our most progressive people. The Turnverein Society is a rich and influential German organization. The German Lutheran Church, corner of Eighth and Flower Streets; the German Methodist Episcopal Church, on Fourth, between Hill and Fort Streets; and the German Evangelical Church, near the corner of Olive and Seventh Streets, are all quite wealthy organizations, and completely out of debt. Hon. L. J. Rose, a native of Germany, is the State Senator from Los Angeles; and Isaias W. Hellman, also a native of that country, is a member of the Board of Regents of the California State University. There are not many Scandinavians, as they instinctively seek a colder clime. The French are here in large numbers. They comprise all classes, from the ignorant Breton who labors on the streets, to those who were high in the graces of Napoleon III and bear titles of nobility. Two weekly papers are published in the French, and one in the Basque language.

There are about four thousand persons of English birth residing in Los Angeles and vicinity. Their native land is ably represented here by Hon. C. White Mortimer, Esq., British vice-consul, whose office is in Temple Block, corner of Maine and Market Streets. The Queen's Jubilee was celebrated in Los Angeles with great *éclat*. D. Freeman, Esq., a wealthy member of the English colony, is one of the best-known and most popular citizens of the county.

Canadians are very numerous, and almost all have, soon after their location here, become citizens of the United States. Hon. P. Beaudry, formerly of Montreal, has been

Mayor of Los Angeles; Dr. H. Nadeau has been Coroner of Los Angeles County, and President of the Los Angeles County Medical Society. Hon. G. W. Knox represents Los Angeles County in the State Legislature. W. W. Robinson, a native of Nova Scotia, has held several important public positions, and was for eight consecutive years city auditor.

The Spanish-speaking population has already been referred to. Scores of them have held important positions, from that of Congressman down to that of constable, and their records in these places have ever been honorable and praiseworthy. The names of Del Valle, Coronel, Dominguez, Pacheco, Sepulveda, and Estudillo will always hold an honorable position in the annals of California del Sur.

The Chinese are a prominent factor in the population of Los Angeles. There are between two and three thousand of them. They were formerly very extensively employed as servants for general house-work, but latterly trained white and colored servants are gradually taking their places. The Chinaman, as a rule, with occasional exceptions, is not desirable help. He is dishonest, generally insolent, and, after making the rolls and dessert for the family dinner, spends his nights gambling in the dirty hovels of Chinatown. The family relation is almost unknown to the Chinese in America. Their associations are of the vilest kind. They are in a condition of peonage, being owned body and soul by one or another of the Six Companies, which imports them to this country.

Each morning every house in the city is visited by a Chinaman with his one-horse wagon loaded with vegetables and small fruits. The laundries run day and night, Sunday and week-day. The butchers deal principally in pork, which is the Chinaman's chief meat. The merchants deal in Chinese specialties, and do also a private banking business. The restaurants are not extensively patronized

by whites. The porky, greasy, nauseating smell is too much for the average Caucasian stomach. Then, again, the Chinaman, when he wishes to remove the feathers of a chicken, has a peculiar way of putting the live fowl into boiling water. This may shock the nerves of the sensitive American, but the Mongolian has a special gleam of delight in his almond eyes as he watches the chicken squirming in the kettle. The opium-joint is a typical Chinese institution. There are probably a hundred of these vile dens in Los Angeles, where Chinese, white prostitutes, and fast young men spend night and day smoking opium, or, as it is technically called, "hitting the pipe."

The Chinese present a great field for missionary work. The Methodist Episcopal and Presbyterian churches have missions in Los Angeles. A clergyman, who has been a missionary in China and in California, says, "Twenty dollars will do as much toward converting Chinamen in China as one hundred dollars will in California." He says the difficulty is that, when they come to the United States, they are bent solely on making money and returning to the Flowery Kingdom. They have no time for religion, and attend the missions, not through religious interest, but to learn the English language, and thereby increase the value of their services.

Every tourist should visit Chinatown twice—once in the daytime and once at night. The best way to see the sights at night is to obtain the escort of a policeman, who will always be able to conduct him through the opium-joints, gambling-houses, and other dens of Chinese iniquity.

Educational Institutions.

The University of Southern California opened its doors October 6, 1880. M. M. Bovard, A. M., D. D., has been the president of this institution from the first. In its or-

ganization and financial management Dr. Bovard has received valuable continuous assistance from Hon. R. M. Widney and Hon. E. F. Spence. The principal university buildings are in West Los Angeles, on Wesley Avenue, and may be reached by the cars of the Main Street line. There are here two large buildings—one a frame structure occupied by the College of Music, the other a massive brick edifice occupied by the College of Letters. In the former the faculty consists of four members, and in the latter there are ten professors and instructors.

The College of Medicine of this university is located near the center of the city of Los Angeles, at 219 Aliso Street. J. P. Widney, A. M., M. D., is dean. The faculty numbers eighteen physicians as teachers. This institution requires a course of three years. Its regular session begins the second Wednesday in October and closes the third Wednesday in April. The intermediate session opens the first Wednesday in May and closes the last Wednesday in June. The University of Southern California is handsomely endowed and is constantly receiving additional bequests. In addition to the colleges already named it embraces a college of theology, located at San Fernando, and a department of agriculture at Ontario, that will be noticed more fully in speaking of those places. The university is under the auspices of the Methodist Episcopal Church.

St. Vincent's College is a Catholic school for boys, located at the corner of Grand Avenue and Washington Street, on the Main Street line of cars. Very Rev. A. J. Meyer, C. M., is the able president. Father Meyer, as he is affectionately termed, is very popular in Los Angeles, and his school bears an excellent reputation. It occupies a very large building and is admirably located.

The Los Angeles College, a day and boarding school for young ladies, is located at the corner of Fifth and Olive Streets. Rev. D. W. Hanna, A. M., is the president.

Among the faculty we notice Miss Mary A. Roe, instructor in zoölogy and geology. Miss Roe is a sister of the Rev. E. P. Roe, the well-known novelist. The Ellis Villa College is a select school for young ladies. The Second Street cable-line passes its doors. Rev. J. W. Ellis is the president. St. Paul's School is for boys only, and is located on Olive Street, between Fifth and Sixth Streets, in the same yard with the Protestant Episcopal Church of the same name. There are also three Catholic primary schools. McPherson Academy, for boys only, is located on Grand Avenue, between Sixth and Seventh Streets. It is an excellent and well-patronized school. The Branch State Normal School occupies a large brick structure on the corner of West Fifth Street and Grand Avenue. It is surrounded by extensive and beautiful grounds. This institution is the equal in scholarship, discipline, and efficiency of any normal school in the United States.

The Los Angeles City Board of Education, of which Dr. Joseph Kurtz is president, employs over one hundred teachers. The average salary paid the teachers is eighty-five dollars per month. The Los Angeles School Department has always been liberal toward women. Mrs. A. S. Averill is a member and secretary of the City Board of Education. Mrs. Chloe B. Jones was principal of the high school and afterward city superintendent of schools. At least seven eighths of the teachers are women. The school department has been embarrassed by the rapid increase in population, but the new buildings to be erected this year will relieve the present crowded condition. The public schools, from the kindergarten to the high school, are noted for their efficiency.

There are numerous private schools in the city, including kindergartens, primary, grammar, schools of elocution, business colleges, and dancing-schools. There are also many private teachers of music, painting, drawing, etc.

Churches and Philanthropic Institutions.

Los Angeles is a city of churches. There are three Catholic houses of worship. The old cathedral is a quaint, interesting structure on Main Street, opposite the Pico House; but the new cathedral, on Main, between Second and Third Streets, is a far more imposing edifice. There are nine Methodist Episcopal churches, one being of the Church South, and one German. There are four Baptist churches, four Congregational churches, three Presbyterian, one United Presbyterian, one Hebrew synagogue, one Lutheran, and two Protestant Episcopal, organizations. The Christian or Disciples' Church, the denomination to which President Garfield belonged, have one church and are about building another. The Universalists, Spiritualists, Unitarians, and Chinese also have services regularly. Reference to a city directory, which can be found in any hotel or drug-store, will give the locations of these societies. The hours of services are about the same as in Eastern States.

There are two orphans' homes, one a non-sectarian institution, at the corner of Yale and Virgin Streets; the other, under the auspices of the Roman Catholics, at the corner of Alameda and Macy Streets. The Flower Festival Society is a unique, philanthropic band of prominent ladies, with Mrs. R. M. Widney as president, who give each year a grand floral carnival in Hazard's Pavilion. This is to Los Angeles what the Mardi Gras is to New Orleans or the ice palace is to Montreal.

The object of this society is to provide at a reasonable figure respectable boarding-places for young women who work in stores and factories. The society has recently erected a commodious building on Fourth between Main and Los Angeles Streets, where young women are boarded at cost, or, if their salaries do not justify even that outlay, at less than cost. The last flower festival paid all the

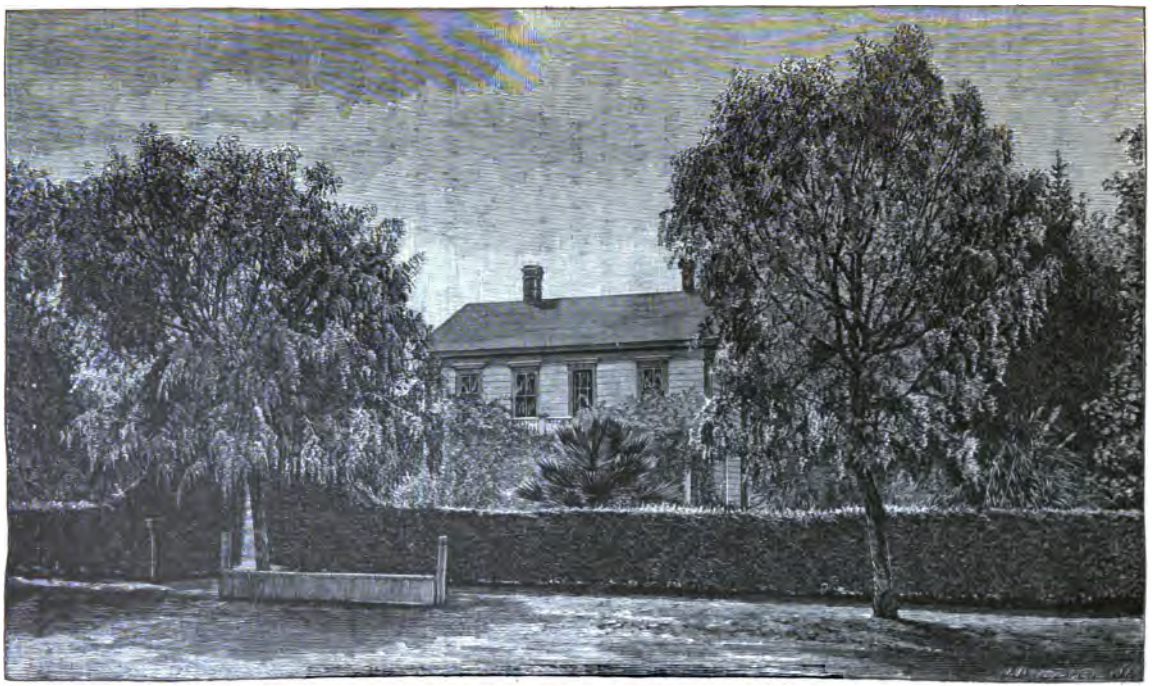
debts of this society, and next year they hope to clear enough to make additional improvements. This fair occurs annually in April, and every tourist who visits it will feel well repaid for his trip across the continent. There is also a Ladies' Benevolent Society, with Mrs. Ducommon as president, that does a great amount of good. The German Ladies' Benevolent Society was organized for charitable work among the Germans.

Los Angeles has a public library on Main Street, opposite Commercial Street, open free to the public.

Parks.

There are two large tracts of unimproved land reserved by the city for parks, but the only parks the tourist will at present care to visit are the "Plaza," near the Pico House, the Second Street Park, on the Second Street cable-line, and the Sixth Street Park, bounded by Sixth, Hill, Olive, and Fifth Streets. The last mentioned is a beautiful little park, where one can spend a restful hour. Diagonally across the street from this park is the building occupied by Brigadier-General Nelson A. Miles, U. S. A., as headquarters for the Department of Arizona. Surrounding this building are extensive and beautiful grounds open to the public. If the tourist is so fortunate as to have a letter of introduction to General Miles, he will meet a courteous, polished, scholarly gentleman, who is also a brave, successful soldier. He is modest, dignified, and entertaining. His appearance indicates that he was born to command. The general is very popular—except with the Apache Indians.

Elysian Park is a large body of very hilly land, that is as yet wholly unimproved. East Los Angeles Park is also a park only in prospective. There are numerous extensive private grounds of great beauty where visitors are allowed to stroll.



Shafer and Lauterman's House and Grounds, Los Angeles.

Secret Societies and Kindred Organizations.

There are doubtless twenty thousand persons in Los Angeles who belong to secret or semi-secret societies. When the ban of the Catholic Church was so pronounced against secret societies, this would have been an impossibility; but, since Archbishop Alemany has expressed a willingness for his people to belong to the Ancient Order of United Workmen, they have accepted this letter of permission as inferentially including all secret societies except that of the Free-Masons.

The Masonic Order was the first to establi in Los Angeles. There are three subordinate Chapters of Royal Arch-Masons, one subordinat the Grand Council of Royal and Select Masters, mandery of Sir Knights, and the Hugues des Pay cil, No. 3, Knights of Kadosh, Robert Bruce No. 6, of Rose Croix, and King Solomon Lodge tion.

The Odd-Fellows were only a year behind th in effecting an organization in Los Angeles, and now four subordinate lodges, one encampment, o of Patriarch Militant, and one Rebecca Degree Lo

The A. O. U. W. have seven subordinate lod three Legions of the Select Knights of the A. O This order is numerically very strong. The B'na have two lodges. The Knights of Pythias have f ordinate lodges and three handsomely uniformed di The American Legion of Honor have two councils Grand Army of the Republic have three posts. The Sons of Veterans have one camp; there is one lodge of the Knights of Honor and one lodge of Chosen Friends. The Knights of Labor have four lodges. There are also the various trades-unions usually found in a city of the size of Los Angeles. The Good Templars have two lodges, and

the Native Sons of the Golden West (natives of California) have also organizations. There is a council of the United Friends of the Pacific, a commandery of the United Order of the Golden Cross, a branch of the Catholic Knights of America, a division of the Ancient Order of Hibernians, a wheelmen's club, a division of the Sons of Temperance, a council of the Royal Templars of Temperance, and two branches of the Catholic organization known as the Young Men's Institute.

There is an incorporated association of school-teachers, nine tenths of whom are women. The name of the association is the California Land League, and it represents a capital of seventy-five thousand dollars. The object of this society is to buy property, and build and rent houses.

The principal social organization is the Los Angeles Athletic Club, of which E. A. Preuss, the postmaster of Los Angeles, is president. The Caledonia Club is a social organization composed of Scotchmen. Any one is admitted to the organization who can stand the crucial test of listening to a bagpipe.

Los Angeles is a city of wineries and distilleries, but there is nevertheless a strong and respectable temperance element. A high-license law, which imposes a license of six hundred dollars per year, was carried by a large majority, and is strictly enforced. The churches are the chief temperance societies. Every pulpit in the city is a center from which radical temperance views are promulgated; but, of the distinctive temperance organizations, the Women's Christian Temperance Union is the most aggressive and effective.

The W. C. T. U. was first organized here in 1883. There are now five strong unions in Los Angeles. The society owns a very central and desirable lot, and are now arranging to build a thirty-thousand-dollar structure.

Los Angeles is the military headquarters of the Depart-

ment of Arizona, which includes the Territories of Arizona and New Mexico, and that part of California south of the thirty-fifth parallel. Brigadier-General Nelson A. Miles is the commander. There is also in Los Angeles a battalion consisting of three companies of the National Guard of California.

The Los Angeles County Medical Society was organized January 31, 1871, with Dr. John S. Griffin as president. The presidents since then have been Drs. R. H. Dalton, Joseph P. Widney, Henry Sayre Orme, Joseph Kurtz, Walter Lindley, H. Nadeau, W. G. Cochrane, F. A. Seymour, Andrew McFarland, and F. T. Bicknell.

The membership includes nearly all of the regular school of physicians. The meetings are held the first Friday evening in each month in the parlors of Hollenbeck Block, corner of Spring and Second Streets. Dr. J. S. Griffin, the first president, is still a Los Angeles practitioner. He graduated at the University of Pennsylvania in 1837, entered the United States Army as assistant surgeon, and, after serving in Florida and New Mexico, came to Los Angeles as chief surgeon of General Kearny's forces.

The doctor is now past seventy years of age, the Nestor of the medical profession of Southern California. His family was noted in Virginia, his native State. One of his sisters was the wife of the late General Albert Sidney Johnston, and now lives in Los Angeles with her two sons and one daughter.

There is also a Homœopathic Society of more recent organization, of which Dr. Dorothea Lummis is president.

Manufactures in Los Angeles.

Los Angeles is not what would be called a manufacturing city, yet there are a large number of extensive manufactories. Among these are nine iron-foundries, with sev-

eral hundred employés ; three flour and feed mills, turning out about five hundred barrels of flour daily ; a dozen planing-mills, employing from twenty to sixty men each ; several brick-kilns, turning out an aggregate of a quarter of a million of brick daily ; an extensive pottery ; several factories for the manufacture of iron irrigating-pipes, employing several hundred men ; several carriage and wagon factories ; cigar-factories, employing one hundred and fifty men ; six soap-factories, with about fifty employés ; one ice-factory, two broom-factories, and one cracker-factory ; there are six granite-works, employing a large number of stone-cutters ; at least two hundred men are constantly engaged in manufacturing artificial stone for sidewalks and water-pipes ; two factories for the manufacture of soda and mineral waters ; an establishment for the purpose of pulling wool by steam from sheep-skins ; a hair-factory, where hair and moss is prepared for mattress-makers and upholsterers ; several mattress-factories ; very large furniture-factories ; two breweries, that use twenty thousand sacks of barley and three hundred bales of hops per year ; several wineries and brandy-stills ; one woolen-mill ; canneries and fruit-crystallizing works ; eight candy-factories, one very extensive ; one wholesale ice-cream factory ; two vinegar and pickle works ; several cooper-shops ; shirt-factories ; box-factories, for making boxes for oranges and other fruits ; several coffee and spice mills ; a bone-dust factory ; and several establishments for the manufacture of tin-ware. There are car-shops, where the cars on our street railways are made. The car and locomotive repair-shops of the Southern Pacific Company are also located in Los Angeles. There are jewelry-works, electric works, straw-works, lithographic works, hat-factories, tanneries, fruit-drying establishments, and a pork-packing cold-storage company, with a capital of three hundred thousand dollars.

Los Angeles, and in fact all Southern California towns, present great advantages for manufacturing enterprises, owing to the cheapness of crude petroleum. The flouring-mills, electric-light works, electric street-car engine, pressed-brick company, and a number of smaller establishments burn petroleum exclusively. The streets of Los Angeles are lighted by electricity, but there are two complete systems of gas-works—one coal-gas, the other water-gas—and, at the present writing, the price of water-gas is one dollar per thousand feet.

Trade and Commerce of Los Angeles.

There are a Board of Trade and a Produce Exchange. Both are located in Baker Block, corner of Arcadia and Main Streets. Mr. A. M. Lawrence is the secretary of each of these organizations, and visitors desiring detailed information about business will find him in his office ever ready to impart information.

There are now either completed or in course of construction fifteen lines of railroad coming into Los Angeles. There are, as will be learned in the chapter on harbors, two harbors — one thirteen miles and the other twenty miles from the city limits. Trains go to and from these seaports every hour in the day. Los Angeles is the central commercial point for Southern California, Arizona, and New Mexico. There are numerous wholesale grocery-houses, dry-goods stores, notion-houses, boot and shoe houses, clothing-houses, and liquor-stores. The Los Angeles drummer is abroad in the land, and the grass groweth not under his feet. In fact, all lines of business are represented here by wholesale houses except that of drugs, there being no wholesale drug-store. Los Angeles is probably the only city in America with over sixty thousand people that can truthfully boast of having no wholesale drug-house.

The city assessment-roll amounted, in 1886, to $46,000,000, and the tax-rate is $1.30. Property is assessed for about forty per cent of its real value.

The chief exports to the East from Los Angeles are dried and green fruits, wool, wine, brandy, hides, vegetables, and potatoes. During the six months' orange season it is nothing unusual for twenty-five cars loaded with oranges to leave the city daily.

There were filed with the Recorder of Los Angeles during the first six months of 1887, 15,077 transfers with consideration amounting to $41,993,569—$14,000,000 more than the total transfers for the twelve months of 1886.

The fact that, during the month of May, 1887, there were 352,882 separate pieces of mail-matter handled in the Los Angeles post-office, gives some idea of the busy population. There are eight banks—all financially solid—with deposits amounting to about ten million dollars, and a proportionate capital. The usual rate of interest is eight per cent. In 1875 the common rate of interest was eighteen per cent.

The center of business is at First and Main Streets and First and Spring Streets, and the daily crowd of vehicles and people hurrying to and fro is equal to the living mass that is always to be seen surging through Broadway, New York. The observer will soon realize that here is a great commercial metropolis. An idea of the amount of building can be gained from a knowledge of the number of extensive brick-kilns, and from the fact that over sixty-five million feet of lumber were sold in Los Angeles during the first six months of 1887.

Wine Interests of Los Angeles.

The following extract, from a letter from Major B. C. Truman to the "New York Times," gives an idea of the wine interests of Los Angeles:

"Los Angeles County has an area of 22,005 acres of wine-making grapes, from which nearly five million gallons of brandy and wine were made in 1886. The first California wines known in the East were from Los Angeles County, and some choice varieties, made from thirty-year-old vines, found their way into Eastern cellars thirty years ago, as there are a number of vineyards in the county known to be from seventy to eighty years old, and which are still in excellent bearing order. There are about 3,500 acres of vines from five to fifty years old, 5,000 acres of four-year-olds, 8,000 acres of three-year-olds, 3,500 acres of two-year-olds, and 2,000 acres of one-year-olds. There are also 2,700 acres of table-grapes, and 1,000 acres of grapes used for making raisins—25,705 acres of grape-vines in all. Los Angeles County contains about 4,812 square miles, or 3,080,000 acres. A great deal of this land is watered from three rivers, and lies between the Coast Range and the Pacific Ocean, and is mainly devoted to vineyards and the production of citrus and other fruits. The city of Los Angeles is 482 miles by rail from San Francisco. It contains about fifty-five thousand inhabitants, and has one of the most delightful and equable temperatures in the world, and has already been visited by ten thousand valetudinarians since the 1st of December last. Besides its superior climate and prodigality of soil, and its railroads running in nine or ten directions, and a good steamship service to and from San Francisco, the city has a public library, Board of Trade, eight banks, twenty churches, one fine opera-house and one or two theatres, a great number of institutions of learning, four eight-page daily newspapers, twenty-nine miles of street- and cable-roads, and many other evidences of prosperity and civilization. It is lighted by both gas and electricity, and has a splendid water system, a good, paid fire department, and efficient police. In and about this pretty city are the thousands of acres of grape-vines I have enumerated above, and a great many wineries, some of which are as complete and extensive as the most perfect ones in Europe. Of course, I did not visit all these vineyards and wineries, but made the rounds of some of the leading and most important ones. Among the oldest and best-known vineyards in the city is the Beaudry vineyard, which has vines twenty, thirty, and forty years old. Mr. Beaudry has an immense winery, and some fine old red and white wines in hard-wood tanks, which have never been put on the market. Kohler and Froeling, who make a

great deal of light red and white wines on their vineyards in Napa and Sonoma Counties, have a large vineyard here, upon which they make their ports and sherries and burgundies and brandies. The Keller vineyard is a well-known one, and has turned out hundreds of thousands of gallons of dry and sweet wines. There are a great many others, too numerous to mention. The largest vineyard in the State, next to Senator Stanford's, in Tehama County (which is the largest in the world), is the Nadeau vineyard, which covers an area of over two thousand acres; it is three or four years old, and lies between this city and Anaheim. The first year's yield of this immense vineyard was sent to the still, and turned out forty-five thousand gallons of brandy, which Mr. Nadeau warehoused, and then paid the Government $40,500. The three next largest vineyards are at and near San Gabriel, and are owned respectively by 'Lucky' Baldwin, who has upward of a thousand acres in Mission and other vines; Stern and Rose (Sunny Slope vineyard), over a thousand acres of many varieties; J. de Barth Shorb (San Gabriel Wine Company), about fifteen hundred acres of Missions, Zinfandels, Mataros, Burgers, and other varieties. These parties have as costly and extensive wineries as many of the leading producers in France, and make and age most all kinds of dry and sweet wines and brandies. These three winemakers have European experts in all the different branches, including 'cellar-keepers,' and their wineries are like parlors, while the processes of picking, crushing, fermenting, blending, and aging are as perfect as it seems possible to make them. Now, these men all have houses in New York, and so do Kohler and Froeling, and nothing is sent there by them but wines and brandies that are absolutely pure, and can be depended upon."

Few people know that the vignerons of Los Angeles are greatly indebted to the Parisian scientist Pasteur for the excellent character of their wines. All who have lived here ten years remember Don Mateo Keller, at that time the leading wine-manufacturer. He corresponded frequently with Pasteur as to the best methods of perfecting wines, and Pasteur sent him, with the compliments of the author, a work which he wrote on that subject, which

proved of great use. Don Mateo, of pleasant memory, has been borne to his last resting-place, while Pasteur reached the acme of human glory.

Climate of Los Angeles.

This subject will be but briefly mentioned, as the whole ground has been covered *in extenso* in another chapter. The following extracts from a paper read before the Kings County Medical Society, Brooklyn, New York, give a general idea of the climate of this city : *

All writers on climatology agree that the first requirement of a climate for all classes of invalids is that it shall be equable in temperature.

Now let us compare the temperature of Los Angeles, which is no better than the average Southern California climate, with that of Boston, which I believe is no worse than the average New England climate.

From the Signal Service records at Los Angeles for a period of six years I learn that the average temperature of January, the coldest month, was 52° Fahr., while for August, the warmest month, the average temperature was 69·70°.

The Signal Service records for 1881 of the office at Boston show that the average temperature of January, the coldest month, was 32·60°, while the average temperature of August was 69·90°, thus showing a difference in average temperature of hottest and coldest months in Los Angeles of less than 18°, while the difference between the average temperature of the coldest and the average temperature of the hottest month in Boston is 37·3°. Further, these same records show that the greatest daily range in tempera-

* "Southern California : A Climatic Sketch," by Walter Lindley, M. D., "New York Medical Journal," October 30, 1887.

ture in Los Angeles was 29°, while the greatest daily range in Boston was 69°.

With the month of May the dry season begins. This term "dry season" applies only to the coast valleys. In the mountains there are now and then sharp thunder-storms, and it is at this time that the desert beyond the Sierras has its rainy reason.

I have often from Los Angeles, in the midst of her dry season, witnessed black clouds and vivid lightning, telling me of summer storms east of the mountains. Sometimes even in Los Angeles there is a shower during the summer.

There is seldom a year in which there are a half-dozen cloudy days between the middle of May and the middle of November.

I will again refer you to the Signal Service reports of the Los Angeles station, in order that you may have a more positive basis of information than my casual observations :

MONTH.	1879.	1880.	1881.	1882.	1883.	1884.	Average
January	3·59	1·33	1·43	1·01	1·62	3·15	2·02
February	0·97	1·56	0·36	2·66	2·87	13·36	3·58
March	0·49	1·45	1·66	2·96	2·87	12·36	3·58
April	1·19	5·03	0·46	1·83	0·15	3·58	2·04
May	9·24	0·04	0·01	0·63	2·02	0·39	0·55
June	0·03	0·00	0·00	0·00	0·03	1·39	0·24
July	0·00	0·00	0·00	0·00	0·00	0·02	Trace.
August	0·00	0·00	0·00	0·00	0·00	0·02	Trace.
September	0·00	0·00	0·00	0·00	0·00	0·00	0·00
October	0·93	0·14	0·82	0·05	1·42	0·39	0·62
November	3·44	0·67	0·37	1·82	0·00	...	1·24
December	6·53	8·40	0·52	0·08	2·56	...	3·61
Total	17·41	18·65	5·53	10·74	14·14	...	13·29

Now we will compare these figures with the rainfall in some other well-known place, as recorded in vol. xxiv, "Smithsonian Institution Reports."

Average rainfall in inches.

PLACE.	Period of observation.	Spring.	Summ'r	Autumn	Winter.	Year.
Los Angeles	5 years.	3·73	0·01	1·91	7·23	12·88
San Francisco	20 "	4·80	0·49	2·68	12·32	20·29
Asheville, N. C.	11 "	.....	.....	.....	.....	40·20
Cincinnati	41 "	11·17	12·67	6·29	9·83	42·96
New York city	29 "	11·43	13·08	11·20	10·81	46·52
Jacksonville, Fla.	13 "	19·01	21·27	13·07	8·66	53·01

I hope you will notice the amount of rainfall in Los Angeles during winter. It was only yesterday that a prominent physician of New York city expressed great surprise when I told him that there were only from twelve to twenty rainy days in Los Angelos during the rainy season. He said he thought it rained there continuously during that period.

But your health-resort may have a mild and equable temperature, a proper altitude, a pure atmosphere, and yet, if it has not variegated scenery and pleasant social surroundings, the health-seeker will die of *ennui*.

This is the point in which Los Angeles, as well as many other places in Southern California, is most happily endowed. A thriving city of forty-five thousand inhabitants,* with satisfactory hotels, boarding-houses, and restaurants; excellent schools, ranging from the kindergarten and public school to colleges, a State normal school, and a well-equipped university; a commercial metropolis with the ocean at its door, and the center from which radiate seven lines of railroad; with cable-roads that noiselessly carry people from the busy streets over the hills to the suburbs; lighted three hundred and forty days in the year by the sun and three hundred and sixty-five nights in the year by elec-

* Now over sixty thousand.

tricity; elegant churches, in which worship Roundheads and Cavaliers, the Salvation Army and Unitarians; an opera-house fully equal to any in the city of Brooklyn, in which are to be seen during the year all the leading theatrical attractions of America, ranging from the irrepressible New York negro minstrel troupe to that "noblest Roman of them all"—Lawrence Barrett; from the vivacious Rhea to the histrionic Janauschek; the home of the rose, where the humblest cottage is surrounded by a perpetual flower-garden; where heliotropes and fuchsias clamber to the tops of the houses and there bloom in all their beauty the year round; and where the bright and cheerful geranium, which you care for so tenderly in your conservatories, is frequently used for hedges and reaches a height of several feet.

Add to this the fact that Los Angeles is located in a county which produces annually many millions of bushels of barley, wheat, and corn; a county in which there are now growing 22,000,000 grape-vines, 1,000,000 orange-trees, and many thousands of olive, apple, apricot, nectarine, fig, and pomegranate trees—and you will realize that there is variety enough to entertain the most fastidious.

Beyond all these points of interest are the two that God put there before man planted the fig-tree or the vine—the mountains and the ocean. Fourteen miles east of Los Angeles are the Sierra Madre Mountains, and fourteen miles west of Los Angeles is the Pacific Ocean.

The point that should be emphasized is that the climate of Los Angeles and all the Southern California cities located within reach of the daily ocean-breeze is delightful *both* in summer and in winter. Eastern people have an idea that, because it is a warm winter climate, it must be a hot summer climate.

A gentleman just arrived in Los Angeles, August 20, 1887, from Lake Minnetonka, says: "I suffered with heat every day I was at the lake, but here in Los Angeles it is

delightful. The thermometer may indicate a temperature as high as at Lake Minnetonka, but the daily breeze from the ocean keeps the heat from being oppressive, while at Minnetonka a person swelters in the shade."

The physicians of Los Angeles are agreed that for the average case of incipient phthisis such places as Newhall, San Fernando, La Cañada, Monte Vista, Pasadena, Sierra Madre, Alhambra, Whittier, San Gabriel, Monrovia, Arcadia, and Glendora, all within a radius of thirty miles from Los Angeles, are superior, as they have altitudes of one thousand feet and upward, and have not the humidity of places nearer the coast.

In conclusion, Los Angeles is a delightful, prosperous city. It has all the commercial activity and phenomenal growth of Kansas City or Minneapolis, a winter climate superior to that of Mentone or Nice, and a summer climate far pleasanter than that of Lake Minnetonka or Bar Harbor.

Such a climatic and metropolitan combination exists nowhere else on earth.

Los Angeles County, Soledad Township.

Los Angeles County is situated in the southwestern part of California. The center of this county is about one hundred miles from the southern boundary of the State, and about eight hundred from the northern boundary. It extends in a sweeping curve for about one hundred miles along the Pacific Ocean.

The county contains over 5,600 square miles, or 3,600,000 acres, being two thirds the size of the State of Massachusetts. Its assessed valuation for 1887 is $92,000,000. It is bounded on the south by the Pacific Ocean and San Diego County; on the north by Kern and Ventura Counties; on the east by San Bernardino County; and on the west by Ventura County and the Pacific Ocean. A more irregu-

larly-shaped territory could scarcely be plotted. Its greatest length is one hundred and twenty miles, and its greatest breadth seventy-two miles. It is divided into two almost equal parts by the thirty-fourth parallel.

The Coast Range of mountains extends through the county from the northwest to the southeast corner. The traveler will rarely hear the term "Coast Range," however, as these mountains have local names by which residents always designate them. There are the following names given to different portions of this range in Los Angeles County: Santa Monica Mountains, Verdugo Mountains, Cahuenga Mountains, Zujunga Mountains, San Fernando Mountains, Sierra Madre Mountains, San Bernardino Mountains, San Gabriel Mountains, San José Mountains, Cucamonga Mountains, and Santa Ana Mountains. The highest mountain in this county is Wilson's Peak, about six thousand feet high.

According to the 'Rural Californian," the various fruits grown in Los Angeles County may be found in the markets during the following portions of the year:

Oranges	Christmas to July.
Lemons	All the year.
Limes	All the year.
Figs	July to Christmas.
Almonds	October.
Apples	July to November.
Pears	July to November.
Grapes	July 15th to December.
Raisins	October 20th (new).
Peaches	June 15th to Christmas.
Apricots	June 15th to September.
Plums and prunes	June 1st to November.
Cherries	June.
Japanese persimmons	November.
Guavas	Nearly all the year.
Loquats	May 15th to June 15th.

Strawberries	Nearly all the year round.
Raspberries	June 15th to January.
Blackberries	June 15th to September.
Currants	May 15th to June 15th.
Gooseberries	June.
Water-melons	July to October.
Musk-melons	July to October.
Mulberries	July to December.
Nectarines	August.
Olives	December to January.
Pomegranates	September to December.
Quinces	October to December.

In the most northerly part of the county—that is, north of the San Fernando Mountains—is a large body of land known as Soledad Township. This township includes 1,200,000 acres, or one third of the whole county. Because of its position it has a climate quite different from the portion of the county lying south of them.

The average altitude is 2,500 feet. Newhall, thirty miles from Los Angeles, the principal town, the lowest point, has an elevation of 1,265 feet. The winters are cooler than in the southern part of the county, and the summers are somewhat warmer. While this region is not so generally known as the southern part, yet it is very healthful, and should be particularly sought by persons suffering from lung-diseases. The atmosphere is so dry that vast quantities of fruit are brought here by rail to sun-dry. The busy camp at Newhall, where the fruit-drying was most extensively carried on during the summer of 1887, looked like the barracks of a fair-sized army. This feature of the atmosphere has led raisin-grape growers to look toward Soledad Township with hopeful eyes. Grapes are successfully raised throughout this section, and there is little doubt but that it will ultimately become a raisin-grape producing county. Ten acres of raisin-grapes will yield a larger profit per year than sixty acres of wheat. With this

as a basis, it is easy to calculate the population that Soledad township may in time contain.

In the vicinity of Newhall, and particularly at Ravenna, a few miles from Newhall, asthmatics almost invariably derive great benefit. In fact, the residents in this sparsely-settled territory are many of them asthmatics, living there because it is the only place they can live and be free from their tormentor.

There are good hotel accommodations at Newhall, and comfortable quarters for a limited number at Ravenna. In the western part of this township is Elizabeth Lake, a body of water covering about six hundred acres. There are also in this vicinity five smaller lakes, their elevation being about 3,700 feet. They are surrounded by a fertile, interesting country.

The northeastern part of this township comprises what is known as the Mojave Desert. The soil of this desert is highly nutritious, and it is a desert only because of the lack of moisture. Water is now being conveyed upon this land, and in a few years it will be a desert no longer.

Antelope Valley is a large tract of land in this township, traversed by the Southern Pacific Railroad. This valley is being rapidly occupied by settlers. Artesian wells have been sunk, and deciduous fruit, berries, and all the cereals are profitably grown. To the farmerwho is poor in pocket but rich in energy, this section presents many opportunities.

The vicinity of Elizabeth Lake abounds in ducks, deer, rabbits, and quail, while on the so-called desert lands, antelope are numerous, and the mountains are the haunts of the grizzly bear and mountain-lion.

The Santa Clara River, the principal stream of Ventura County, rises in this township in Soledad Cañon.

The most important railway stations are Newhall, Sangus, Lang, South Side, Acton, Alpine, Lancaster, and Rosa-

mond. There are very productive petroleum-wells in the neighborhood of Newhall, that will be described in a separate chapter. Placer gold-mining is quite profitable in parts of this township, and there are also undeveloped mines of silver, copper, coal, iron, and graphite. Marble and granite are abundant.

This vast township is a *terra incognita* to the average citizen of Los Angeles County, and especially so to the ordinary tourist and health-seeker, yet see what a list of interesting features it presents! To the student of Nature who loves mountains, forests, lakes, and plains; who delights in geology, botany, or zoölogy; who desires fossils, shells, rare flowers, and ferns; to the sportsman, the miner, the farmer, or to the fruit-grower, there are in this hitherto almost unnoticed territory points of great interest and value. More especially is this section to be commended to the health-seeker. Here, at an altitude of 2,500 feet, many invalids who suffer from pulmonary troubles, and fail to find relief nearer the ocean, are greatly benefited.

There are also in this township a number of mineral springs, the most noted being the iron sulphur springs at Lang Station, forty-three miles from Los Angeles, and at an elevation of 1,681 feet. These springs have quite a local reputation for curing rheumatism. There is a comfortable hotel near these springs.

San Fernando Township.

San Fernando Township is just south of Soledad, from which it is separated by the San Fernando Mountains. The Southern Pacific Railroad, in going from the town of San Fernando in this township to the town of Newhall in Soledad Township, passes through a tunnel one and one-third mile long, with two exceptions the longest on the Western Continent. This township was formerly a ranch of nearly

125,000 acres, and belonged to General Andres Pico, who made the treaty with General Fremont at Cahuenga in 1847. General Pico sold the ranch in 1846 to Eulogio F. de Celis for $14,000, and in 1853 he repurchased one-half of it for $15,000.

This ranch has ever since been one immense wheat-field, and although subdivided and belonging in tracts of a few thousand acres, to a number of owners, yet it has still remained almost exclusively a wheat-producing territory, a twenty-thousand-acre wheat-field being no rare sight.

These tracts are now being subdivided into farms of from five acres to one hundred and sixty acres, and, as a consequence, the products will be much more diversified. The subdivision of the large ranchos into small farms has hitherto insured a thorough and economical cultivation of the land, and this, more than any one other cause, has operated to make Southern California the most prosperous and progressive section of the United States.

In about the center of this township is the Mission of San Fernando Rey, founded in 1797 at the joint expense of Charles IV of Spain and the Marquis of Branceforte, Viceroy of Mexico, in honor of Ferdinand V, King of Castile and Aragon.

The old church is now a complete but an interesting ruin. Formerly the mission-buildings aggregated over a mile and a half in length. Many of them have been leveled, but some are yet in an excellent state of preservation.

Mrs. Helen Hunt Jackson, speaking of this town, said: "San Fernando is one of the places I desire to see twice." There are around this mission some fine old olive-trees, of which a correspondent of the "New York Times" recently wrote as follows:

"Some twenty years ago I visited the San Fernando Mission, twenty-four miles from Los Angeles, in company with Generals Jefferson C. Davis and Stoneman, and we sat long, one delicious

evening in December, under the olive-trees at that place, smoking cigarettes rolled by Stoneman, chatting about the war, and getting slightly boozed upon aguardiente furnished by General Andreas Pico, who commanded the Mexican forces which had defeated the Americans some twenty years before, only a few miles from where we were sitting and inhaling the perfumed air. I visited the same old trees in January last, which still stand up against the storms of one hundred years, for all around the ancient inclosure, built by the Franciscan Fathers a century ago, stand the olive-trees which they planted with reverent hands before the Constitution of the United States was adopted. Like that Constitution they have borne fruit for the good of mankind. These old trees of the San Fernando Mission, owing to a legal contest of title about the land on which they stood, were neglected for about ten years and left unpruned, while the land was left untilled. Still the grand old trees maintained their living but with limited fruitings. About three years ago, after the title had been settled, P. Cassanave took charge of the grounds and plowed them thoroughly. He then pruned the trees judiciously and awaited results. These have been most gratifying and surprising. Without delay these centenarians commenced sending out hundreds of thousands of new branches and loaded both young and old with precious fruit, while all around the heavy crop of barley thrives, and the trees, though they have received no irrigation, each year produce a glorious crop of handsome olives that make rich returns from thrifty labor. On the bending branches of these ancient trees the fruit, under the sunny sky of San Fernando, will soon be maturing again, and furnish ten thousand gallons of olives for oil or pickles, as may be desired by the owner. Mr. Casanave is now building on the new Fernando colony grounds the largest olive-oil factory in the State, so that he can use up all the olives grown in Los Angeles County."

The town of San Fernando is located on the Southern Pacific Railroad, twenty-one miles from Los Angeles; it has an elevation of one thousand and sixty-one feet. The climate is delightful and the situation beautiful. Between this town and the mountains, one mile away, is a grand, rolling plain, that is now being occupied by cozy homes. Hon. Charles McClay laid out the present town of San

Fernando in 1874. In April of that year a free excursion train was run from Los Angeles to attend the first auction-sale of town-lots. The lots were twenty-five by one hundred feet, and sold at prices ranging from six to twenty dollars.

There are a neat, substantial Methodist Episcopal church, a commodious, attractive public-school building, and a very large three-story brick hotel. San Fernando is the location of the McClay Theological College of the University of Southern California. Senator McClay has endowed this institution with $150,000. He is also erecting the buildings at a cost to himself of $50,000 more. They were finished and occupied early in 1888. This institution is under the control of the Southern California Conference of the Methodist Episcopal Church. Rev. R. N. C. Farnsworth, A. M., is the dean of the faculty.

Artesian wells and mountain streams water this section. Wheat and barley never need artificial watering, but deciduous and citrus fruits demand some irrigation. San Fernando is forty minutes by rail from Los Angeles, and there are several trains each way daily.

One of the most prosperous and picturesque mountain-resorts in Southern California is Monte Vista, situated in a beautiful, fertile valley between the Verdugo and Sierra Madre Mountains. Monte Vista is twenty miles north of Los Angeles, and four miles east of Monte Vista Station, on the Southern Pacific Railroad. Tourists desiring to visit this place for either pleasure or business, should see Mr. F. H. Barclay, No. 30 South Spring Street, Los Angeles. There are at Monte Vista the best of hotel accommodations for a limited number.

The water-supply is pure and abundant. There is quite a body of excellent fruit land in this vicinity, and it is one of the places where the search for health can be happily combined with pleasant out-door employment.

Monte Vista, a health-resort twenty miles northwest of Los Angeles (altitude, 1,500 feet).

La Ballona Township, Santa Monica.

South of San Fernando Township is La Ballona Township, which contains an area of 114,608 acres, and has forty miles of sea-coast. There are many rich grain and fruit farms throughout this township. Some portions are mountainous, but even high on the mountain-sides are vineyards and gardens. These mountain or rather foot-hill vegetable-farms were first occupied by very poor people, who were unable to own land in the valley, but, finding that tomatoes could be raised all the year round, their condition of poverty was exchanged for one of comparative wealth.

A grand, romantic place on the northeast boundary of the township is Cahuenga Pass. This pass is eight miles from Los Angeles, and is the spot where, in 1847, the Fremont-Pico treaty was made. Every tourist should take a carriage-drive to this point.

All along the mountains, near this pass, are cañons in which are the fruit and vegetable farms referred to. Here, also, are large fields of watermelons and muskmelons, and, during six months in the year, large farm-wagons loaded with melons can be seen wending their way to the Los Angeles markets, whence the melons are shipped by rail in all directions.

This township aligns the city of Los Angeles on the west, and is traversed by two railroads—one, the Los Angeles and Independence, from Los Angeles to Santa Monica ; the other, the California Central, from Los Angeles, *via* Ballona Harbor, to Santa Monica.

The sea-coast is of continuous interest to all. Year in and year out the swelling tide rolls in on the long, smooth beach, and each time, as it recedes, leaves behind many treasures of the great deep. Often, as parties of visitors start along the sand-dunes, shell and moss gathering, one delightful surprise after another leads them on, until they

are astonished to find themselves miles from their starting-point. Santa Monica, Santa Monica Cañon, and Ballona are among the most famous resorts on this coast.

SANTA MONICA is the most popular sea-side resort. It is situated on a high bluff on Santa Monica Bay, distant about sixteen miles from Los Angeles.

The comparative mean temperature is as follows: *

Santa Monica, Cal.,	January, 54° ;	July, 70° ;	Diff., 16°
Jacksonville, Fla.,	January, 55° ;	July, 82° ;	" 27°
Nice, France,	January, 41° ;	July, 73° ;	" 33°

The population of Santa Monica is about fifteen hundred, exclusive of the thousands of visitors who resort thither every summer. Trains from Los Angeles arrive and depart about every hour of the day. There are excellent hotels, numerous boarding-houses, and a great many cottages that can be rented for the season. Surf-bathing is the popular entertainment. There are several churches and a public school with a number of teachers. During the summer balls are given once or twice a week.

Ballona is a new town and artificial harbor, that will be more fully described under a chapter on "Harbors."

Old Santa Monica Cañon is a charming spot, about two miles from Santa Monica, and is well worth a day's picnicking. Around a luncheon spread under the protecting shadow of an immense sycamore, beside the clear waters of a mountain stream rushing heedlessly on to its own ingulfment, with great fern and moss-covered cliffs on each side, a merry pleasure-party, whose notes of song and laughter are in harmony with the music of the surf, may be found in this cañon almost every day in the year.

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* "Climatic," by E. C. Folsom, M. D., "Southern California Practitioner," vol. ii, p. 268.

Hotel Arcadia, Santa Monica.

Eucalyptus Avenue, Inglewood, Los Angeles.

INGLEWOOD is delightfully situated on the Los Angeles and Ballona branch of the California Central Railroad. It is eight miles from Los Angeles and six from the ocean. The soil in this vicinity is a deep garden-loam, and all kinds of fruit usually cultivated in Southern California thrive here. An idea of the climate may be gained from the fact that, for the past three years, there has been no frost that

has damaged growing fruit and vines. D. Freeman, of Inglewood, has recently given six hundred thousand dollars to the University of Southern California, which will be used to establish the Freeman College of Applied Science. One hundred thousand dollars of this munificent gift will be used for buildings, and five hundred thousand dollars for endowment. The buildings, located at Inglewood, are now in course of erection, and it is expected that the college will open with the school year of 1888.

Los Angeles Township.

South of Soledad, and east of San Fernando Township, is Los Angeles Township, which has an aggregate area of about ninety thousand acres. It is a very rich and productive township, and has many wealthy fruit-growers in its population. Los Angeles city occupies the southern part.

The Southern Pacific Railroad from Los Angeles to San Francisco crosses the southwestern corner of this township. There are several stations on the road; but BURBANK, a new and prosperous place, fifteen miles from Los Angeles, is the principal village.

The Los Angeles River, a turbulent stream in the winter, but a beautiful creek in the summer, leaving its cañon in the San Fernando Mountains, flows through this township.

GLENDALE, a pretty little town, with churches, schoolhouses, and other evidences of an intellectual population, is about eight miles north of the city of Los Angeles, with which it is connected by a "dummy" railway. In this village is one of the largest peach-orchards in the State, besides numerous orange-groves and vineyards. The visitor to Southern California should see Glendale. In West Glendale, adjoining the town of Glendale, is a large ostrich-

farm. The raising of ostriches has proved a very profitable industry in Southern California. There are large numbers of these birds at this Glendale farm. The birds are kept for their feathers. The average revenue from each bird, from the sale of its feathers, is three hundred dollars per year. The young birds are hatched by "incubators."

VERDUGO CAÑON is an interesting mountain-drive, about six miles from Los Angeles. A day spent leisurely here, gathering ferns and wild-flowers, or hunting rabbits and quail, can be made very enjoyable.

Ten miles north of the city of Los Angeles is La Cañada, a great body of mountain-land, that is extremely fertile, and has been divided into small fruit-farms. La Cañada has an elevation of about two thousand feet, and is a very desirable location for consumptives.

The true plan for the person who has incipient consumption is to secure a small tract of land, build a neat little cottage, and make a home for himself where he can stay contentedly until he has regained his health.

The Tujunga Creek has its source in the northern part of this township, and flows into Los Angeles River.

Wilmington Township, San Pedro.

South of San Antonio is Wilmington Township, a great part of which is a peninsula. There are artesian wells scattered all over Los Angeles County, from Soledad Township to the southern boundary; but the northern part of this township, in the vicinity of COMPTON, is most noted for these perpetual fountains.

As a consequence, this land is remarkably well watered. In early days, the dairy-men were careless about caring for the surplus water, and the result was, stagnant water and malaria. A philanthropic gentleman, with the true Christian spirit, visited Compton, and, on seeing the stagnant

water, said to the only physician in the village, "Doctor, why don't you get the farmers together here, organize a public health association, and drain this water off the land?" The medical man happened to be an Irishman who enjoyed startling people, and his answer was: "Do you think I am a d——d fool? What use would the people have for my quinine and blue mass then?"

Compton was laid out in 1869, and named for G. D. Compton, then the only resident. It is a prosperous town, with churches, school-houses, stores, about all the secret societies, and the other institutions of a California village. It is ten miles south of Los Angeles, on the Wilmington branch of the Southern Pacific Railroad. The distinctive industry is butter- and cheese-making. Corn and barley are profitable crops, but the most profitable crop to raise for stock is *alfalfa*. This is a variety of clover that is raised in every county in Southern California. W. L. Cook, of Santa Ana, in a paper on "Alfalfa," read before the Los Angeles County Pomological Society, said: "In this part of the State we usually cut four times the first year, after that from six to eight times during the year. It is usually cut when fairly in the blossom; should it begin to lodge, it may be cut sooner. The yield depends very much on the amount of care given. The average crop is from one and a half to two tons per acre at a cutting." It is an excellent food for all kinds of stock, hogs not excepted. Fields of alfalfa present a rich, velvety-green appearance that delights the eye.

Deciduous fruits and berries are also raised successfully here, but citrus fruits are not profitable. A visit to this section will interest all who enjoy seeing fine hogs, cattle, artesian wells, creameries, and cheese-factories.

On the coast is the town of WILMINGTON, twenty-two miles from Los Angeles, with which it is connected by the Southern Pacific Railroad. This town was founded by

the late General Phineas Banning in 1858, whose name is intimately associated with the development of Los Angeles County.

Like Compton, it has its schools, churches, etc. Three miles beyond Wilmington is SAN PEDRO, the location of wharves, custom officials, and the point where vessels with freight and passengers for Los Angeles unload. A full description of San Pedro Harbor will be given in the chapter on "Harbors." While it is not the most popular sea-side resort, yet many families go there from Los Angeles every summer, and all who spend a few weeks there are delighted. There are as yet no satisfactory hotel accommodations, and the only pleasant way to do is to rent a cottage.

Concerning the boating and fishing, General D. B. Henderson, member of Congress from Dubuque, Iowa, says, "San Pedro beats the world as a fishing-place." Boats can always be rented at reasonable figures.

San Pedro is the terminus of the Wilmington branch of the Southern Pacific Railroad. It also contains one of the largest lumber-yards in the world. There are three trains daily to Los Angeles.

One mile farther out on the peninsula is Point Firmin, on which is situated the lighthouse. Courteous keepers are always in charge, and an hour can be pleasantly spent here.

In the northwest corner of this township, on the coast, are the salt-works.* A popular drive from Los Angeles for picnickers who wish to spend a day on the coast is to visit these salt-works. The large ranches in the southern part of this township are now being subdivided, and the town of Broad Acres has been established; so that soon the immense grain-fields will give way to small farms.

* This beautiful place is now the scene of great activity. A hotel is being erected at a cost of $250,000, and the name is Rodonda Beach.

San Antonio Township.

East of La Ballona and the southern part of Los Angeles Township is San Antonio Township. It is a rich body of land. With an area of about thirty-five thousand acres, much of the township is given to the cultivation of wheat, barley, and beets, but there are also many fruit-farms. There is one vineyard of twenty-seven hundred acres known as the Nadeau Vineyard. This vineyard, situated about four miles from Los Angeles, is crossed by two lines of the Southern Pacific Railroad: one going to Anaheim, Santa Ana, and San Diego; the other to Compton, Long Beach, and San Pedro. The most satisfactory way of visiting it is by carriage or on horseback. The latter is a very popular way of traveling in Southern California, and excellent saddle-horses for such trips may always be found in livery-stables. In the eastern part of this township is a single barley-field containing eleven thousand acres. It is the Laguna Ranch, and is owned by Colonel R. S. Baker.

For fifteen years the rich sewage of the city of Los Angeles has been used as a fertilizer. A company of fruit-growers own a body of about two thousand acres of land called the Sewage Farm, and upon this the main sewer of Los Angeles discharges its rich contents. This sewage is conducted from the outlet of the main sewer by ditches—one day to one orchard, vegetable-garden, or vineyard, and the next day to another. As fast as it is received upon the land it is to enrich, it is plowed under and thus covered with earth, the best-known disinfectant.

At a recent meeting of the Los Angeles County Medical Society, Dr. F. T. Bicknell, the president, said * he had watched closely in the neighborhood where the Los Angeles sewage was used, for evidence of diphtheria, scarlet fever,

* "Southern California Practitioner," vol. ii, p. 116.

or typhoid fever as a result, but had seen none whatever that could be traced to sewage as a cause. As Los Angeles increases in size, the sewage farm will be enlarged, and there are now numerous property-owners beyond the present sewage farm clamoring to be admitted to the syndicate who control it. The sewage in Southern California does the double work of fertilizing and irrigating, and is, indeed, a great boon.

FLORENCE is the only village in this township. It is six miles from Los Angeles, with which it is connected by the Southern Pacific Railroad.

Los Nietos Township, Long Beach, and Santa Fé Springs.

This immense township of nearly a hundred thousand acres lies just east of San Antonio and Wilmington Township. It is naturally the best-watered portion of Los Angeles County. Old San Gabriel River, New San Gabriel River, and Coyote Creek pass through its entire length of twenty-seven miles. Within its borders are numerous large ranches, small farms, and the following towns: Long Beach, Whittier, Downey, Artesia, Fulton Wells, and Norwalk.

LONG BEACH * is a delightful sea-side resort twenty-three miles from Los Angeles on the Wilmington branch of the Southern Pacific Railroad. There are several trains daily. Long Beach contains elegant hotels, a large Methodist Episcopal church, a Congregational church, good public schools, stores and livery-stables, but no saloons. Herein is one great point in which it differs from Santa Monica. In the latter place there are to be found all classes of society, from the veriest hoodlum to the most reputable citi-

* A new township, called Long Beach, has recently been created out of Long Beach and vicinity.

zen ; but in Long Beach no saloons are tolerated, and all objectionable elements of society are kept out.

The social life at Long Beach is of a kind that most delights people of refined tastes. There is nothing loud ;

Hotel, Long Beach.

there is much that is æsthetic. It is, *par excellence*, an educational watering-place. The professor, whether male or female, hies himself here during the summer to breathe in new inspiration from the waves that beat hopelessly against

the shell-strewed shore. The clerygman takes his semi-vacation here claiming that Bryant was never more mistaken than when he said—

"The groves were God's first temples,"

but that first "the Spirit of God moved upon the face of the waters," and hither he comes for a more intense and direct communion with his Maker. The musician is to be found here, exchanging the music of the piano and violin for the never-ceasing melody of the ocean that sings him into a calm sleep ere night has scarcely overwhelmed the day. Ah, what a lullaby that is! The sweet, peaceful song of heaven that began before man was made, just as the mother's cradle-song is always ready for her new-born child. The Chautauqua Assembly has its annual meeting here every summer.

The term *Long* Beach is not a misnomer, for here is a beach of hard white sand, as level as a floor extending many miles each way. This beach is a perfect natural race-course, and during the season spanking teams from the city can always be seen dashing over this superb driveway.

WHITTIER is a new town recently started by a body of Quakers from Indiana, Illinois, and Iowa, who own around the town a large body of land. It is twelve miles east of Los Angeles and has an elevation of about fifteen hundred feet. All kinds of fruit and grain known to Southern California can be raised here. There is a commodious Friends' Meeting House, a public school, and a prospective college that is to be under the control of Friends.

The intention is to make this a health resort where invalids can have pleasant boarding-places in quiet Quaker families, thus avoiding the bad features of a large hotel. Every person who visits Whittier should go to the top of the hill just back of the town. From this height looking

west can be seen Los Angeles Valley, dotted with towns, and reaching away to the ocean, which is plainly visible; while on the east is San Gabriel Valley, with the towns of Monrovia, Puenta, and Sierra Madre nestling close to the mountains in plain view.

SANTA FÉ SPRINGS is a neat village, with a Methodist Episcopal church, school-house, etc. This place has become famous on account of its iron sulphur wells. There are a half-dozen wells here that contain water rich in medicinal virtues. They are especially noted for curing rheumatism, dyspepsia, constipation, and kidney and skin diseases. There is no question about the efficacy of these springs, for many remarkable cures bear evidence of their worth.

This town is twelve miles from Los Angeles, and connected with Los Angeles by the San Diego branch of the California Central Railroad. A sixty-thousand-dollar hotel has been projected.

Two miles south of Santa Fé Springs is—

NORWALK, an attractive village with the usual quota of churches and school-houses. It is seventeen miles from Los Angeles, on the Santa Ana branch of the Southern Pacific Railroad. There are numerous artesian wells, alfalfa-fields, and corn-fields. Thoroughbred stock is profitably and extensively raised. Four miles nearer Los Angeles, on the same line of railroad, is—

DOWNEY, the center of a rich farming and dairy country. One source of great profit in this vicinity is the crop of English walnuts. This crop is said to be more profitable than any fruit or grain. These walnuts sell by the ton at eight and a half cents per pound, and may be successfully raised in almost any part of Southern California; but the people of Los Nietos Township, especially in the vicinity of Downey, have paid the most attention to them. One resident of this town sold his seventeen-acre crop of walnuts for twenty-seven hundred dollars, being one

hundred and sixty dollars per acre. Downey is settled principally by people from the Southern States, and its citizens are generally noted for contentment and hospitality. This vicinity is rich in water, and is just the place for the farmer. Here, corn is raised in great quantities. A castor-oil mill in the town indicates that castor-beans are a profitable crop.

The Los Angeles County Fair is held here each autumn, and will well repay a visit. Downey is not a health-resort, but it is by no means sickly. The Christians and Baptists have churches here, there are several secret societies, and excellent public schools.

San Gabriel Township.

This township lies just east of Los Angeles, and south of Soledad Township. It has the best reputation of any part of Los Angeles County for citrus fruits and vineyards.

Its elevation varies from eight to twenty-five hundred feet, and from one side to the other it is noted as a resort for consumptives. It contains the city of Pasadena, and the villages of Alhambra, South Pasadena, Lamanda Park, San Gabriel, New San Gabriel, and Sierra Madre—a galaxy of surpassing beauty, with the Sierra Madre Mountains forming a majestic background.

PASADENA—an Indian word meaning "Crown of the Valley"—is now a city with a population of eight thousand. In 1873 it was a sheep-pasture, and was purchased by a party of Indiana capitalists for six dollars per acre. For a number of years it was called Indiana Colony. Mr. D. M. Berry, now of Los Angeles, was the manager of this enterprise, and at that time, after a conversation with this sanguine man, people would smile at his ideas of the future of this place.

It did seem too bad to see a man of Mr. Berry's ability wasting his time on such a forlorn hope. He would show that the soil was peculiarly adapted to fruit-growing; that there was an abundance of good water; that it was just the location for a great health-resort; that the climate was delightful, both in summer and in winter; that the mountain-scenery was magnificent; and that the indigenous flowers and ferns were constant sources of pleasure. From these premises he would claim that this beautiful place would soon teem with a great population, but his hearers would shake their heads incredulously and improve on Shakespeare by saying, "Alas, poor Berry! a fellow of infinite jest and most excellent fancy."

To-day, we find Mr. Berry's sheep-pasture a city of elegant homes; with eight thousand inhabitants; with numerous street-car lines; many very large and imposing school-buildings; a well-selected public library in a building that cost fifty thousand dollars; four banks; with planing-mills, fruit-canneries, and fruit-crystallizing works that give employment to hundreds of people; numerous secret societies; a very strong and wealthy Young Men's Christian Association; Presbyterian, Congregational, and Baptist churches; a Methodist Episcopal church that cost thirty thousand dollars, and a projected Universalist church that is to cost as much or more.

Pasadena is eight miles from Los Angeles, on the California Central Railroad. Trains go between the two cities about every thirty minutes during the day, the fare for the round trip being fifty cents. No person can afford to miss visiting Pasadena. The following extract from the "Southern California Practitioner," September, 1887, is from the pen of W. W. Chamberlain, M. D., a well-known physician of New York city. Dr. Chamberlain, at the time of writing, had already spent several winters in Pasadena:

"The chain of mountains, extending from southeast to northwest—from Bear Valley to San Fernando Tunnel—is known by the general name of the Sierra Madre. It is the link which connects the Coast Range with the greater range of the Sierra Nevada. It is about seventy miles long. Its peaks—San Antonio (Old Baldy), Cucamonga, San Fernando—are from seven to ten thousand feet high, and the intervening crest-line from four to six thousand feet. It is mainly of granitic rock, often much calcined and usually metamorphic. It is not a simple and single line, but a mass of mountains, having the same general strike or trend. It presents at Pasadena its almost precipitous wall, scantily covered with sage-brush and shrubs. Almost all the day the blazing sunlight rests upon its innumerable ridges, often bare, and the green ravines which divide them. Winding through and down its many cañons come the streams which feed the life and beauty of the plains below. It rises like a barrier between the arid desert to the eastward and the seaward slope of Los Angeles County. It shuts off the desert winds which, sometimes cold and sometimes fiercely hot, are always dry and withering. It reflects the warmth of the southern and western sun. It arrests and condenses the water-laden clouds, which the trade-winds bring from the warm South Sea; and is the determining cause of the diurnal movement of the land and sea breezes. After sunset the cooled air begins to flow down from the mountains toward the sea; by the middle of the forenoon the heated air rises along the face of the mountains, and the sea-tempered air moves mountainward to fill the vacuum. Rarely does either current become more than a gentle breeze of from four to six miles per hour. After sunrise and after sunset come two or more hours of neutralized currents, when the chimney-smokes go straight upward, and one may carry an unshaded and unshaken flame whither he will. One who will be quiet, may have, from eleven to three, what temperature he may choose. The mercury may stand at 110° on the outward face of the southern piazza and at 78° on the outward face of the northern piazza.

"Between the Sierra Madre and the coast, and, in a general way, parallel to both, is an often-interrupted range of lower hills, called, as they go from the west to the east, the Santa Monica, Cahuenga, Verdugo, Arroyo, and San José Hills; and between them and the Sierra Madre is inclosed the wide and beautiful valley of the San Gabriel River and its upland terrace or bench. Pasadena, which

lies in the angle between the Arroyo and the Sierra Madre, is separated from the general San Gabriel Valley by a terrace about one hundred feet high at its western end, which slowly merges into the general plain as it goes eastward.

"Pasadena, with its outlying districts of South Pasadena, Olivewood, Lamanda Park, Sierra Madre, and Monk's Hill, covers about twenty square miles.

"SOIL.—The soil is a gray gravel, more or less mixed with brown loam. It is light and porous; the waters go down and come up through it. It is said, on good authority, that there are large springs on the summits of the Sierra Madre. The surface drainage is small but the ground water is near; for in many places good wells are easily made, and the plains and hill-sides here and there are studded with great oaks and sycamores, which go on in perennial growth through dry and wet years; and the groves and avenues of eucalyptus-trees show trunks, some a hundred feet high, grown from slips or seed in ten or twelve years. The soil produces freely all kinds of trees and fruits belonging to the sub-tropical and temperate zones. The apple and the apricot, the cabbage and the cactus, the grape and the guava, the oak and the olive, the pine and the palm, flourish side by side, each almost as well as in its native habitat.

"WATER.—The water hardly appears in its natural channels. As it comes down from the mountain ravines it is drawn off, in open ditches and in pipes, and distributed for irrigation and domestic use. One learns the use and beauty of water here in a way and a measure which is seldom known in the East, for here the supply seems insufficient; there is more of it now than there used to be, and it is said to be capable of still further large development by tunneling the hills, and by sinking artesian wells on the plains. The pressure in Pasadena is sufficient to carry it to the top of the buildings on the highest lands which are occupied. In its sensible properties it is tasteless, inodorous, clear, lustrous, free from gas, and of natural temperature. Analysis shows it to be a considerably mineralized water, containing enough of the alkaline salts to make it, in common parlance, rather hard. It carries 18·9 grains of solid matter to the wine-gallon, and would seem to be a feeble counterpart to the Carlsbad waters, as will be seen by the following comparison:

Analysis.

	By Ragsky.—Spradel Spring, Carlsbad, Bohemia.*	By Hilgard—University California. Sierra Madre water.†
	Grains.	Grains.
Total of salts in wine-gallon.....	361·00	18·9
Sulphate and chloride of sodium	229·63	9·1
Carbonate of sodium	90·00	0·4
Carbonates of { lime..... magnesia ..... silica... ..... }	27·62	9·4
Sulphate of lime.....	11·00	0·0
Phosphates, fluorides, etc..... Iron, strontium, etc.....	4·75	0·0
Total	361·00	18·9

"Thus, the principal salts are the same and the ratio of their distribution, and of the total mineralization is, roughly, as 20·1. Chemically, the water seems to be 'deobstruent,'—i. e., it is very slightly laxative and diuretic, but not to such a degree as to be noticed by those who are accustomed to it. It does not produce increase of urination in the diabetic, or in the earlier stages of Bright's disease. Organic contamination will be found in it if it is taken from the open ditches or from vegetating reservoirs, but is not found in that which is piped direct from the source. The later condition will soon be general in Pasadena.

"RAINFALL.—The rainfall varies greatly in different years. The highest recorded is forty-seven inches in 1884; the lowest is five inches in 1876. Eighteen inches is considered a fair supply, and is about the actual average. The rain falls largely at night. It is rare to see more than four rainy days in succession. The season for rain is from November to May, during which period there will be sixteen to eighteen rainy days, in spells of two or three days at a time, and an occasional rainy night between two bright days. It is rare that a whole day is cloudy; but cloudless weeks are com-

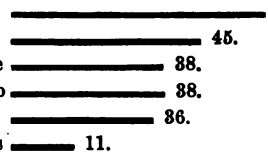
* Reference, "Handbook of Medical Science."

† Letter from Professor Hilgard.

mon. Fogs are rare; dews are light, and rarely noted except on low lands.

"TEMPERATURE.—The temperature is less absolutely equable than in the neighboring sea-coast towns. As Pasadena is not a station of the United States Signal Service, and Los Angeles is, I take the records of the latter place—distance from Pasadena seven miles:

PLACE.	Elevation.	Rain-days.	Cloudiness.	Humidity.	Rainfall.	TEMPERATURE. Jan. and Feb.	Mar. and April.	May and June.	July and Aug.	Sept. and Oct.	Nov. and Dec.	Mean.
New York.....	....	122	41	73	43	27	41	62	72	55	34	48
Aiken, S. C.....	585	132	37	58	51	45	56	72	81	68	48	61
Jacksonville, Fla.....	37	127	36	68	67	54	63	79	82	72	58	68
San Antonio, Texas	676	113	29	67	34	43	66	81	81	61	50	63
Los Angeles, Cal.....	350	51	28	67	16	54	58	64	65	62	55	59



Difference of the means of the two coldest and the two warmest months.

Algiers.... 23

Mentone... 33

"A much more instructive indication is obtained by noting the difference between the mean temperature of the hot and cold months, which is indicated graphically by the black lines, and arithmetically by the figures attached. It thus appears that Los Angeles has fewer rainy days, less rainfall, a much more equable temperature, closely approximating the ideal mean of sixty degrees. In dryness of the air Aiken exceeds it, but it must be remembered that Aiken is ten times as far from the sea as Los Angeles, and considerably higher in level, which is, in fact, not an average point for Southern California.

"I esteem the comparative cloudiness, taken in connection with the mild and equal temperature, as most significant. Weber,* quoting from the 'Proceedings of the British Royal Society for 1877 and

* Ziemssen's "Cyclopædia of Therapeutics," vol. iv, p. 41, and *passim*.

1878,' says: 'Light is inimical to the development of bacteria and the microscopic fungi associated with petrifaction and decay; the preservative quality of light is most powerful in the direct solar ray, but can be demonstrated to exist in the ordinary diffused sunlight; and the actinic rays of the speculum have the greatest effect. . . . In the higher animal organisms, when deprived of light, oxidation does not take place so energetically, tissue-change and nutrition are impaired. . . . In winter an invalid in southern lands enjoys the sun and daylight for several hours longer than in high northern latitudes.'

"The long, bright day of Southern California, with unclouded sky, mild and even warmth, and gentle winds, invites the invalid to live in the open air, and protects him while there.

"There are considerable differences between the local climates of Los Angeles and Pasadena; due to the differing distance from the sea (eighteen and twenty-six miles) and the differing elevation (three hundred and fifty and eight hundred to a thousand feet). Humidity is one of the most important factors in local temperatures. It tempers the sun's heat and checks the earth's radiation. It lessens each extreme. It checks the rapidity of changes. In general terms the humidity varies immensely with the distance from the sea and the elevation.

"From the best comparisons which I have been able to make, in the absence of definite records, I think the mean relative humidity of Pasadena is about 60° as compared with 70° or 72° in the coast towns of San Diego, Santa Barbara, etc. In the same way the annual and diurnal range of the thermometer would be about 10° greater than in the towns named. The high point moves up. Pasadena is hotter in the summer, but not colder in winter, than Los Angeles; the mean will therefore be higher. It is about 60° for the whole year at Los Angeles, and about 70° at Pasadena. The extremes are 32° and 100° at Los Angeles and 34° and 108° at Pasadena.

"Many of the older residents declare that the summer climate is fully as enjoyable as the winter. June is not always warmer than December; 80° Fahr. in the dry and breezy air of Pasadena does not seem as warm as 75° in the humid and sultry air of the East.

"Clinical Histories.—In earlier days Pasadena was an outlying pasture-ground of the San Gabriel Plain, and subject to the ad-

ministration of the Franciscan Mission of San Gabriel. For nearly twenty years, from 1830 to 1849, the Mexican governors curtailed the authority, fed upon the revenues, and parceled out the lands of the Church.

"When it became apparent that California would soon become part of the United States, Governors Alvarado and Pico made haste to distribute among their retainers and friends all the ungranted lands, and their grants were, for the most part, held valid by the Government of the United States. For the last twenty years these grants have been divided again and again, and have come into the market. Thus, in 1873, about fifteen hundred acres, held under the Garjias and Wilson grants, were sold to a colony of Indiana people. The financial crisis of 1873 practically broke up the organization, but some of its members remained, and from 1873 to 1876 some thirty-five families, containing one hundred and fifty members, settled upon the territory and have remained there. To these have been added, particularly within the last three years, strangers enough to raise the population to somewhat more than five thousand, among whom the old-timers are dispersed.

"There are no authentic records, in fact none of any sort, of the vital history of the original settlers; but by conversation with some of their number, and a comparison of their statements, I have derived the following information. From the time and efforts given to verifying its points, I believe it closely approximates actual facts.

"It must be remembered that a portion of these original immigrants came as confirmed invalids, a larger portion on account of their inability or unwillingness to endure the harsher climates in which they had previously lived. Such a community could not be assumed to possess average vitality or expectation of life.

"They were obliged to create their homes on the new and arid soil of an upland plain. Only gradually did comfortable houses replace the tents and shanties and 'adobes' in which for years they were harbored. Such conditions do not seem to offer average protection to infancy and age and feeble life.

"But the record seems to say that there were thirty-five families, comprising, with children brought with them and children born here, one hundred and forty-nine persons.

"Allowing ten years as the average period of residence, and multiplying one hundred and forty-nine by ten, we have fourteen

hundred and ninety years of aggregate life. In these families thus aggregated, including old, the diseased, and the infants, there have occurred, in ten years, thirteen deaths; less than one per cent! Most of these were from causes quite independent of local influences. Thus, the causes of death given are, cerebral tumor, one; diabetes, one; apoplexy, one; diseases of the lungs, four; old age, one; heart-disease, four; children, four; thirteen in all.

"Several cases, said to be 'diseased lungs,' have issued in permanent recovery. There have been no cases of consumption among children born here, although hereditary pre-disposition must be presumed for many. There has been no death in these thirty-five families from typhus or typhoid fevers, diphtheria, measles, or whooping-cough. In the whole community, numbering now nearly five thousand people, I have been able to learn of but four deaths from scarlet fever and one from diphtheria in ten years. Twice in the last ten years there have been local evidences of diarrhœa and dysentery, mild in character and without mortality; also a few cases of typhoid fever, all traceable to local causes—water contamination from open ditches and neglected reservoirs. These causes were promptly removed, with speedy suppression of the disease.

"It has been thought that miasmatic diseases are likely to come in, as the irrigating water is spread over an annually increasing area, and the land is shaded by increasing areas of orchards and groves.

"There are reasons for doubting the truth of this assumption. In one of the oldest orchards lives a family whose eight children have been reared on purely irrigated land. There has never been among them one case of miasmatic disease; though some of them are now adults. A few years since an ague-stricken colony of forty-three persons was brought from the 'bottoms' of the Tombigbee River, in Alabama, and placed on the oldest, lowest, and dampest ranches of the San Gabriel region. For two years ague was rife among them, but the residual effects of their former abode have been eliminated, and now ague is either unknown or very rare among them. A great improvement in their general appearance is noted.

"It would be hard to find anywhere a better-developed and more wholesome-looking body of children than you may see in the public schools of Pasadena.

"Thus we may conclude that the vital record of the place, up to the present time, has been very exceptionally good. Henceforth

the population will contain a large number of persons who have been sent thither as a forlorn hope—a last resort—and mortality from chest-diseases may be very large. It is with a melancholy and embittered sense that the local medical men recognize that so many are thoughtlessly or cruelly sent only to die among strangers and far from all the resources of home.

"Having thus considered the physical advantages of Pasadena, it remains to notice the social and municipal privileges and attractions which figure so largely in the choice of a residence or temporary abode.

"The boundless faith and enterprise of the citizens in this direction have secured remarkable results. More than one hundred thousand dollars have been raised within the past year for church construction. There are six or more churches already, and four more are under contract. One of them is, and two more will be, such as would be considered an ornament to any Eastern town or city.

"A system of well-equipped schools with good buildings culminates in a high school, for which an ample and elegant building is completed.

"There are three banks, overflowing with money, which during the last six months has resulted from real-estate transactions exceeding one million dollars.

"Four street-railways in operation, and as many more undertaken or projected, radiate from the center of the town to all points of the compass. The great transcontinental systems of the Atchison, Topeka, and Santa Fé, the Atlantic and Pacific, and the Southern Pacific enter the town, and are soon to build, on the principal street, large and elegant stations, to accommodate the great and increasing passenger traffic.

"There are miles of well-constructed concrete sidewalks, and they are being laid in all directions.

"There is a well-organized and rapidly-increasing public library. A Young Men's Christian Association building and a theater will soon combine in the education of the young folk.

"The shops and markets are adequate to the present, and are expanding to meet future demands.

"Two hotels, with accommodations equal to those of our best watering-places, are in operation, and in the present season have been obliged to refuse almost as many guests as they admitted.

There is an insufficient number of private boarding-houses with a tariff of from ten to twenty dollars per week. There are furnished lodgings of all qualities, tolerable and intolerable restaurants, where one may be fed or famished, at discriminate prices.

"The social life of the place is peculiar. The community is composed of former residents of every State in the Union, and most of the nations of the globe. The Mexican type of Indian, the Chinese coolie, and the Carolina type of Negro furnish the lower ranks of labor, and are much more decent and civil than the similar class in Eastern cities. Mechanics, artisans, and gardeners are mostly Americans, or Germans of very good class. Proprietors and agents, etc., are largely recruited from the Northwestern States, Iowa taking the lead.

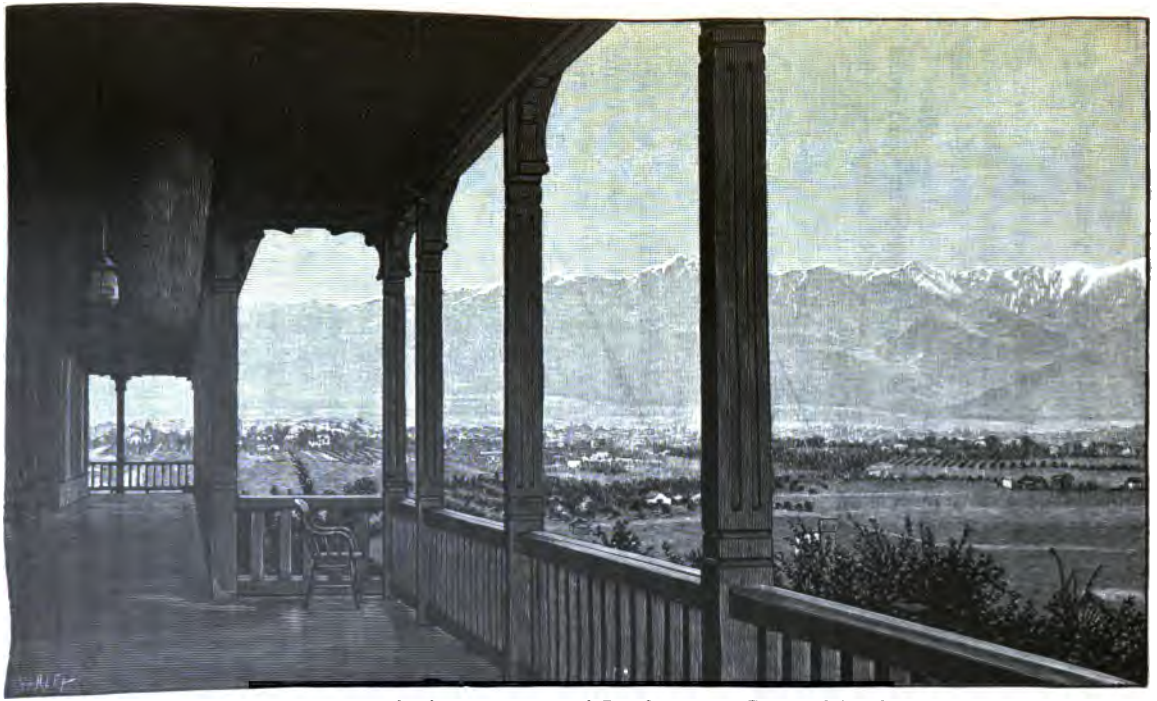
"There are many people from the older States whose education, property, and taste have their fair influence in forming society. Cleveland, Chicago, and Minneapolis are well represented; and there is a faint and vanishing savor of the older Californian life.

"Altogether it is a spirited and highly cosmopolitan community; how conservative it is appears from the fact that there is, I believe, but one saloon where liquors are sold by the dram; and how æsthetic—from the general cultivation and use of flowers, and the very pleasing and frequent musical and dramatic entertainments.

"Nowhere else in California does a more wide and fertile plain invite man's cultivation; nowhere else does the pulse of travel and traffic beat more visible and constant; nowhere else is a serener sky bent above a fairer landscape; margined and sentineled on one side by the green and much-carved hills and snow-capped mountains, and on the other by the far-shining sea."

In the southern part of Pasadena is the great Raymond Hotel that entertained thirty-five thousand guests during the fall, winter, and spring of 1886–'87. It has a station of its own called Raymond. The hotel is located on a very commanding site, and the illustration on the opposite page gives an idea of the view from its veranda. Two miles nearer Los Angeles than Pasadena is—

SOUTH PASADENA, a rapidly-growing village, with numerous beautiful homes, orange-groves, etc.



View of Sierra Madre Mountains and Pasadena, from Raymond Hotel.

Four miles farther from Los Angeles than Pasadena, on the same railroad, is—

LAMANDA PARK, a new town with stores and other village accessories. This is the nearest station to the Sierra Madre Villa, a noted hotel for tourists. Kinneyloa, the ranch of the Hon. Abbott Kinney, is near this point. It contains one of the largest orange-orchards in California. An illustration on page 91 gives a view of the place, with a grove of live-oaks in the foreground.

Coming from Los Angeles, the first village is—

SAN GABRIEL, a delightful old town on the Southern Pacific Railroad. One mile from this town is the noted Sunny Slope Vineyard, recently sold to an English company for one million dollars.

Here is the San Gabriel Mission, established by Padre Junipero in 1771. The building is still in good condition, and is a point of universal interest. San Gabriel is nine miles from Los Angeles, and has long been noted for its salubrious climate and aged people. In 1878 Señora Eulalia Perez de Guilen died here, aged one hundred and forty-three years, she having been born in Lower California in 1735.* September 5, 1854, Maria Francisca Villabobas de Zavia died, aged one hundred and twelve years. A mile from San Gabriel is the beautiful village of—

ALHAMBRA.—Here is an elegant hotel, bank, a schoolhouse, several churches, and orchards of almost every variety of fruits—apricots, nectarines, apples, pears, plums, guavas, oranges, lemons, and limes. All reach their greatest possibilities in this vicinity. Near Alhambra is the winery and distilleries of the San Gabriel Wine Company, the largest building of the kind in the world.

SIERRA MADRE is the name of a village near the eastern edge of this township. It is not on any railroad, but the

* The age of Señora de Guilen has been established beyond doubt.

nearest station is Santa Anita, on the California Central, sixteen miles from Los Angeles. Sierra Madre is the residence of a large number of very wealthy, aristocratic, highly-educated families who have elegant mountain-villas, some of which are on such a large scale that one is carried back in thought to the castles of Europe. The climate here is very healthful, and all of this foot-hill region is noted as a resort for invalids.

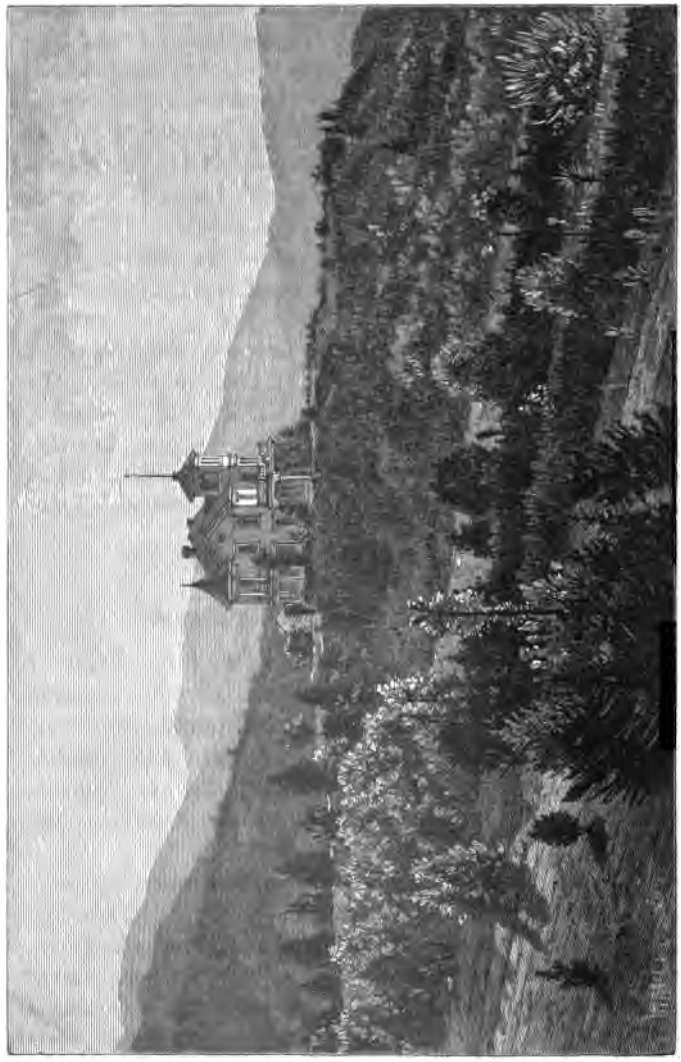
Here, again, the invalid should remember that the best way to gain health is to get a cottage, live an independent life, avoiding contact with other invalids.

WILSON'S PEAK.—Away up in the mountains back of Pasadena is Wilson's Peak, where an observatory is to be established through the generosity of Hon. E. F. Spence, ex-mayor of the city of Los Angeles. A company has also been organized to build a railroad to the top of this peak—six thousand feet above sea-level. A very large sanitarium will also be erected here.

El Monte, Azusa, and San José Townships.

These three large townships lie side by side south of Soledad Township, bordered on the west by San Gabriel Township, and on the east by San Bernardino County. This one tier of townships, resting here together and forming about one-eighteenth part of Los Angeles County, contains almost everything that mortal man could desire or eye could wish to see.

Traversed by railroads, rivers, and mountains; with numerous villas, ornamented with the palm, the heliotrope, and the rose; surrounded by orchards and vineyards of luxuriant growth, and widely diverse products; where almost every home has an altitude of from one to four thousand feet; with few fogs or frosts; with the perpetual view of the valleys dotted with towns, the ocean flecked with



Residence of N. C. Carter, Esq., Sierra Madre.

white sails, and the purple-tinted mountains of the islands. A two hours' tramp to the north will lead to mountain dells, waterfalls, ferns, and wild-flowers, or an half-hour's ride on the cars will leave one in the center of a great metropolis. Here God and man have thus, in one superlative effort, brought together all these features. Is it a wonder that people of wealth and culture are coming in great numbers to secure homes?

The Southern Pacific Railroad traverses the southern portion of these townships, and has in them the following stations: Savanna, El Monte, Puente, Spadra, and Pomona.

SAVANNA is an unimportant station in a wealthy agricultural region.

EL MONTE is the center of a territory very much like that of Downey. Here, again, like Downey, we find corn, hogs, and cattle predominating, and here, again, also, we find, as in the vicinity of Downey, the great bulk of the population has come from the Southern States.

Following the San Gabriel River from Downey to El Monte, this is the chief line of products. Where hogs and corn are leading sources of wealth you can rest assured there is no health-resort. This small section around El Monte is totally different from nineteen twentieths of the lands in these townships. The altitudes, as can be seen by the tables, is only two hundred and eighty-six feet, and the land is moist. For the farmer who wishes to raise hogs, deciduous fruits, and grain, there are great inducements, but the health-seeker, or the person who desires to grow citrus fruits or raisin-grapes, should avoid this small strip of country.

PUENTE is fifty feet higher than El Monte, and twenty miles east of Los Angeles. It is the center of the Puente oil-district, and is on this account a point of interest. There is here a large hotel. A fuller report of the oil-wells here can be found in the chapter on Petroleum.

Farm Scene in Vernon.

SPADRA is a station ten miles east of Puente, situated at an altitude of seven hundred and five feet.

POMONA.—Pomona is three miles farther east. In 1875, a land company, in which L. M. Holt, Milton Thomas, and T. A. Garey, of Los Angeles, were the leading spirits, purchased a great body of rolling land, upon which they laid out a town they named Pomona. On Washington's birthday, 1876, there was an excursion from Los Angeles to the embryo town, to attend an auction sale of lots.

Many went who were not interested in lots, but who spent the day joyfully wandering over the plains, through the rich, green carpet of fern-like alfilēria—a wild grass that grows profusely throughout Southern California—and furnishes food for all varieties of stock, not only in the winter and spring, when it is green, but also in midsummer when, without any harvesting, it becomes sun-cured, and is an answer to the question often asked, "How can stock keep so fat where there is no green grass?"

But, on this February day, the alfileria had on its delicate bluish-pink blossom, which gave the green carpet a lighter tint, that was here and there again relieved by bright orange rugs, varying in size from a few yards square to acres in breadth. What were these brilliant rugs?

On closer look they proved to be solid beds of brilliant poppies, that at this time of the year reach perfection. Such beautiful bouquets as were gathered on that bright February day! Happy was every child with its hands full. There were lavender-colored lilies, bright-red cardinal-flowers, pretty crucifers, vast bunches of violets, cream-colored bell-flowers, and the delicately-shaded tulip. Too bad to change God's flower-garden into a busy, sordid town!

Eleven Februaries have come and gone since that auction sale, and wonderful changes have come to pass. Here on this plain is now a city of thirty-five hundred inhabitants, with banks, school-houses, and churches; and

now a great Congregational college is being established here that will doubtless make Pomona an intellectual center. There is no available record of the number of thousands of acres of apricots and other fruits around this town. The surrounding country is a great orchard, and Flora has stepped aside to make place for Pomona.

The town of Pomona has an elevation of eight hundred and sixty-seven feet, and in the immediate vicinity can be found any altitude between this and fifteen hundred feet. The citizens have been so busily engaged in their commercial pursuits that they have taken little thought of the advantageous location of their town for a health-resort, but it is nevertheless a desirable point for persons with pulmonary troubles.

The air is dry and pure. The daily breeze that comes in from the ocean has, in its journey of fifty miles, lost its moisture, but it still serves the purpose of equalizing the temperature and keeping midsummer cool and midwinter warm. Pomona is blessed with an abundant water-supply. There are sixty-five artesian wells, with an average flow each of two hundred thousand gallons in twenty-four hours, in this vicinity, and a large body of water is brought down from the snow-covered sides of Old Baldy, through a rift in its side called San Antonio Cañon.

There are brick-yards, pipe-works, wineries, feed-mills, mattress-factories, fruit-canneries, and numerous other industries. There are several nurseries, one firm having, in 1887 sold over thirty thousand orange-trees.

The Methodists, Episcopalians, Presbyterians, Congregationalists, Baptists, Disciples of Christ, Universalists, Catholics, German Lutherans, and the Band of Holiness, all have churches here. There are lodges of Masons, Odd-Fellows, Ancient Order of United Workmen, Knights of Pythias, a post of the Grand Army of the Republic, and a Young Men's Christian Association.

Santa Anita Ranch.

There are two newspapers—the "Times-Courier" and the "Progress."

THE SANTA ANITA RANCH.—From two to five miles north of and parallel to the Southern Pacific Railroad is the California Central Railroad, whose track is laid along the base of the mountains. This is a new road, having been recently completed from Los Angeles to San Bernardino. The line of this road has lately been the scene of a wonderful growth. Promising, ambitious, wide-awake towns have sprung up as if by magic.

The traveler will, after half an hour's ride on this road, have passed by the Raymond Hotel, through the city of Pasadena, and reached Santa Anita, the first station in El Monte Township. This is the nearest station to the village of Sierra Madre, and it is also the nearest to the celebrated Santa Anita Ranch, the home of E. J. Baldwin, better known as "Lucky" Baldwin. Here, at Mr. Baldwin's home, fourteen miles from Los Angeles, are many acres of orange-groves, hundreds of acres of vineyard, beautiful lawns, an artificial lake and fountains, and a stable of probably the most noted horses in the United States.

This was the home of the famous mare Mollie McCarthy, which died three years ago, and left three colts that present marks of future greatness. Here is Lucky B., the seven-year old runner. It is rarely that a runner remains successfully on the turf at this age. Here is also to be seen Volante, the best five-year old running-horse in America, and the noted stallions Grimstead and Rutherford, the sires of almost all of Mr. Baldwin's thoroughbreds. Besides these, there are eighty other blooded horses in the stables, many of them with national reputations. This is the place where the noted wines and brandies that bear the Baldwin brand are made.

Mr. Baldwin farms on a very extensive scale, and pro-

duces almost everything in the way of grain, fruit, and stock. He has in this vicinity the following ranches:

Santa Anita Ranch	10,000	acres.
La Puente Ranch	19,000	"
San Francisquito Ranch	6,000	"
Felipe Lugo Ranch	3,000	"
Portero Grande	5,000	"
Merced	3,000	"
Portero Chico	100	"
A total of	46,100	acres here,

while west of Los Angeles is the Cienega Ranch of four thousand acres, carried on as a model dairy. Mr. Baldwin has a great deal of the best business property in the city of Los Angeles, and four thousand acres of land in other parts of Los Angeles County. Much of his property is now being subdivided and sold in small farms to actual settlers.

Every visitor to Los Angeles should take what is known as the *Grand Round*, which is a day's drive from Los Angeles. This trip includes the following places: The Raymond Hotel, from the verandas of which there is a good view of mountains, valleys, and ocean; Pasadena; the Sierra Madre Villa, where a lunch will be relished; Mr. Baldwin's Santa Anita Ranch; Sunny-Slope winery and distillery; San Gabriel Mission, where the visitor is welcome to enter; and then, past the winery of the San Gabriel Wine Company, to Los Angeles. The tourist should have a driver or a guide, and he should see that the driver takes him to these places in the order in which they are here noted.

Two miles east of Santa Anita is *Arcadia*, a new town that has recently been plotted and sold by Mr. Unruh. It is in the center of Mr. Baldwin's possessions, and is the scene of great activity. The land around the town is being sold in small fruit-farms, and, as elsewhere in

Southern California, the great ranch will soon give way to the small farm. May God speed the day!

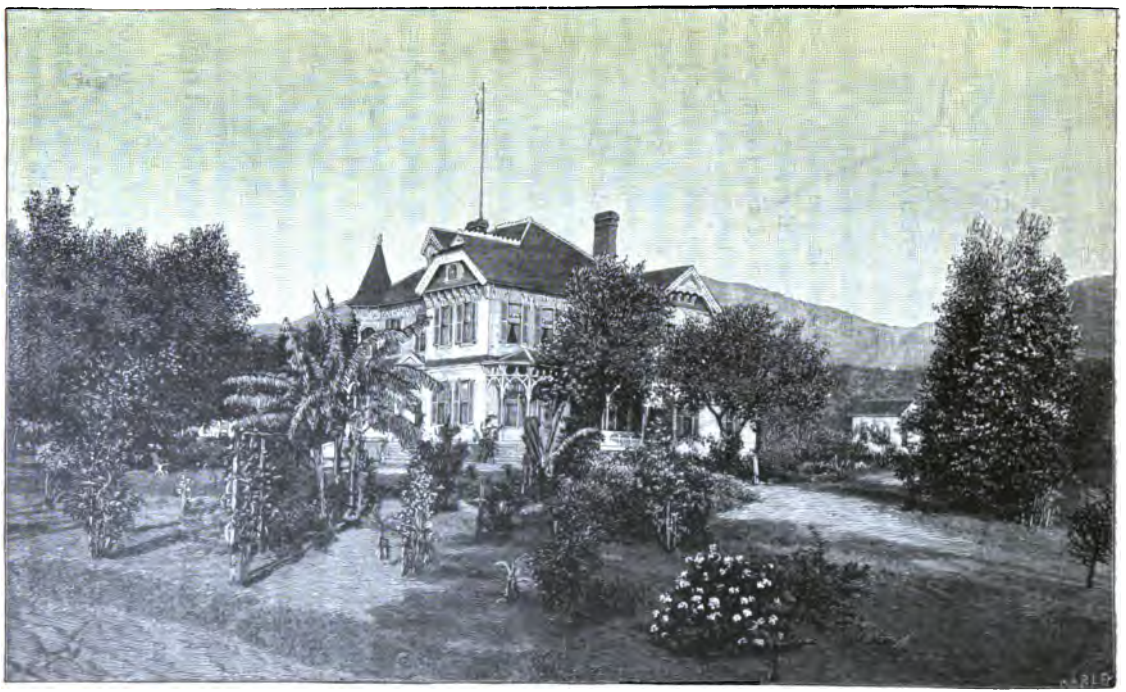
Although this town is but a few months old, there are already numerous creditable buildings completed, and many in course of construction. It is here that Mr. Baldwin will erect his Southern California hotel, which is to surpass anything yet built in the State.

MONROVIA is two miles east of Arcadia, and is the wonder of this coast.

Its history reads like a romance. Its founder, W. N. Monroe, a man whom it is a pleasure to know, bought a large tract of land in 1885 of Mr. E. J. Baldwin. Realizing the advantages of the location, he decided to found a town here, and in May, 1886, the town-site was laid out in lots. Sixteen months have passed since then, and now we find a beautiful prosperous town, with a Methodist Episcopal and Baptist Church, a school-house that cost fifteen thousand dollars, two lines of street-cars, large hotels under excellent management, two banks with large capital, large business blocks, in which merchants are doing a thriving business, and beautiful homes surrounded by semi-tropical plants and productive orchards.

Monrovia is especially commended as a health-resort. It is nineteen miles from Los Angeles, and lies close to the base of the Sierra Madre Mountains. It has an elevation of about twelve hundred feet, but here, as elsewhere, the victim of lung-disease will do best if he has his own cottage, flower-garden, and carriage, so that he may lead a life independent of hotels, and completely separated from other invalids. There are at least a dozen trains daily between Monrovia and Los Angeles.

Every visitor to this town should find Mr. Monroe, the founder of the town, whose friends familiarly call him "Mayor," and who will be recognized by the color of his hair and the genial twinkle of his eyes. Mayor Monroe was



Residence of W. N. Monroe, Esq., Monrovia.

recently a candidate for county treasurer before a county convention, and, in his speech announcing himself, said: "The only thing that induces me to be a candidate is that I understand the party needs on their ticket a red-headed man to catch the colored vote."

Mr. C. F. Holder, the well-known writer, in a letter to the "Los Angeles Times," says:

"Monrovia has been fortunate in the fact that a large number of wealthy men have settled in the place, and are doing their utmost to render it a beautiful resort. Among these are W. N. Monroe, the founder of the town, whose fine residence is a sample of what can be done in a year or so. It looks like a place half a century old, yet the jack-rabbit held possession not long ago. Great groups of bananas wave their graceful leaves, roses, pampas-grass, and a wealth of flowers and fruit tend to make this place a model Southern California home. One of the main avenues is about a mile long, and planted on both sides closely with these graceful trees, which, owing to the mildness of the climate here, bear well."

It is said that a Texan selected a home in Monrovia, and told Mr. Monroe he would be back in an hour with the money. When he returned, another man had bought the place and paid for it. The next day the Texan came back, and asked the Mayor what he would take for another property he had chosen. As soon as a price was agreed upon, the Texan whipped out a six-shooter, and, leveling it on Mr. Monroe, ordered him not to exchange words with another person until the papers were signed and transferred.

This anecdote slightly exaggerates the great desire of people to get homes in this vicinity. J. I. Case (owner of "J. I. C."), of Wisconsin, the Messrs. Studebaker, of South Bend, Indiana, and many other wealthy people have beautiful winter homes here.

"Monrovia sits like a beautiful queen,
With scepter of flowers in a kingdom of green;
Her orange-groves bring her their tribute of gold,
While gardens and vineyards rich treasures unfold.

"Her sweet, balmy breath gives the feeble new life,
Her bright, sunny smile wooes them on to new strife;
She charms and refreshes with pure, gushing fountains,
That come with their coolness from snowy-capped mountains."

San Antonio Cañon.

Duarte, Azusa, Glendora, Gladstone, San Dimas, Lordsburg, Palomares, and Claremont are all prosperous towns along the California Central Railroad. They are all in the midst of good land for citrus and deciduous fruits, and are all good localities for the average case of incipient phthisis. The mountains just back of all these places are sources of never-ending interest. Near Sierra Madre are the Winston gold-mines that an English company have recently purchased. These numerous cañons, leading up to mountain-peaks along this ridge, and any of these towns along the California Central, are good places to start from for a mountain-climb after ferns, flowers, or game.

The most noted of these is San Antonio Cañon, and the following extracts, from a description in the "Overland," for August, 1887, of "Our Camp in the Cañon," by Belle J. Bidwell, graphically tells how the writer and another lady, who is called "the Invalid," spent ten weeks camping here, four thousand feet above the level of the sea:

". . . . This cañon of San Antonio is a great cleft in the Sierra Madre Range. We are told that seventeen years ago it was 'as pretty a cañon as you'd find anywhere. A man could gallop his horse clear up to the saw-mill.' Some mighty storm, perhaps a cloud-burst, in the mountains, aided in its work of destruction by the felling of trees for the mill, has swept down the cañon, carrying

in its flood rocks and trees from the mountain-sides, making for itself a path, and leaving huge bowlders and immense tree-trunks in its course.

"The saw-mill is in ruins now—whether picturesque or not we did not learn, for it is nearly at the head of the cañon, too far away for a visit. The river is now but a small creek, probably from fifteen to twenty feet wide most of the way. It winds its way here and there, and has to be forded nine times by all travelers coming up the cañon with teams. It is by no means a quiet stream; its voice is loud enough to drown human voices near its banks, and, when one wakes in the night, the roar seems like that of a storm of wind and rain. Great alders, willows, and live-oaks grow beside it, apparently fighting for a foot-hold in the rocks, and liable at any time during the winter-rains to be torn from their places and laid prostrate across the water.

"Our camp was very near the end of the wagon-road, five miles from the mouth of the cañon, where the high hills draw so near together that we seemed to be quite shut in by them, and the morning sun did not look down on us until two hours or more after he had shown himself to the dwellers on the plains. Then he left us before five o'clock in the afternoon; but his light lingered long on the peaks, and it was one of the Invalid's pleasures to lie in the hammock and watch the sunset glow on a certain topmost ledge of reddish rock, which shone out long after all else was dark. . . .

"There were papers and magazines to be read, and letters to be written. The mail came up twice a week from the town, fifteen miles away. The Invalid went fern-hunting, and, though it was late in the season for ferns, she was rewarded with some fine maiden-hair, and a few specimens of other kinds, as well as wet feet and many hurts and bruises in scrambling over the rocks. Fishing was quite the fashion. The stream abounds in small trout, which, fried to a brown crispness, made a good addition to the fare. . . .

"We exchanged visits with other camps, of which there were from twenty to thirty some of the time in the accessible parts of the cañon, and thus made some very pleasant acquaintances. Two classes of people, I may say, come to the cañon—residents of the towns, who take their summer's outing in this way, and invalids, who hope for benefit from the mountain air. There is not game

enough to tempt the sportsmen, as in some of the neighboring cañons. In one camp we found five young men from 'the States,' as old residents here say, suffering with affections of the lungs; in another, an elderly maiden from New England and a Kansas woman, each alone among strangers, seeking to get rid of a cough. A young physician with nervous prostration was here, the only one of the invalids not troubled with lungs or throat, and his gain in health was the most evident of any. . . .

"The more sturdy and ambitious ones think the season not complete unless they climb 'Old Baldy,' the highest peak in this part of the range. Few women undertake it, for it is a very rough, hard climb. The men generally make a three-days' trip of it, going the ten or twelve miles up the cañon the first day, staying over night at a mining-camp at the foot of the mountain, making the ascent the second day, and returning to the camp at night, though some go to the summit the first day to have the pleasure of making a huge bonfire there at night, and of seeing the sun rise the next morning. Those who went in August could not stay long, for they could get no water; but in July there was still snow enough to quench their thirst, and give them a chance at snow-balling, too. 'Old Baldy' is snow-crowned for nine or ten months of the year. . . .

"To get acquainted with the birds, no better place could be found than in the shade of a live-oak tree. Sitting there in the morning, we heard their chirps and tseeps—they do not sing at this season—with occasionally a sharper note as some bird discovered the intruder. They had not learned that a human being is to be feared, and would come quite within arms-length if we were very quiet. There were little fly-catchers of soft brown and ashy colors, wee humming-birds, and gay yellow finches, like canaries in shape and size, though of a deeper yellow hue, and with round black caps on their heads. A sober-colored, ragged-looking fellow, perched on a branch, suddenly darted through the air, a flash of brightest hue; a big owl stared at us from a rock one evening; wild pigeons fluttered in and out of the bushes. It was too late in the summer for the glory of the wild flowers. We found only the dry stalks and seeds of many of the beauties that had been born to 'waste their sweetness on the desert air' in February and March. Then, if we could have been there, we should have seen the beautiful 'shooting-stars,' or wild cyclamens, which rival their sisters, the

cultivated cyclamens, in beauty and fragrance; several varieties of lupines; blue and white larkspur; 'baby blue eyes' (nemophila); various kinds of mimulus; Indian pinks (castilleia); and others quite as pretty. I must not overlook the forget-me-nots, very delicate white flowers, and a coarser kind of a dull blue, growing rankly almost everywhere; or the orange-colored poppies, over which all the Eastern people 'rave.' For weeks these make brilliant patches of color in the valleys and on the hills, varying from pale yellow to deepest orange, the two sometimes shaded into each other in the same flower. Even as late as July we found a few very small, very pale ones in the cañon. It is the eschscholtzia of Eastern gardens, but a small clump or border of them in a garden gives but a faint idea of the effect of acres of a glowing orange color.

"Still, in August we found the red and yellow columbine, just as it grows on New England hill-sides; gorgeous tiger-lilies; big yellow primroses, like the ones we know in the East, except that, in true California fashion, they grow much larger; the beautiful white clematis, climbing over the trees, hanging in graceful festoons and ropes from the branches, and filling the air with sweetness. Later, indeed, among the very last flowers that we found, were immortelles, golden-rod, delicate, large pink asters and small purple ones, and some others of the composite family. On almost every hill-side we saw the whitish stalks of the yucca, called here 'Spanish dagger.' Going near, we found the ripening seed-pods, but early in June we should have seen the flowers in their glory. The tapering flower-stalk, from ten to twenty feet high, bears many panicles of bell-shaped, greenish-white blossoms. This flower-stalk is porous in texture, and sections of it make very convenient pin-cushions. The leaves, narrower than those of the Spanish bayonet proper, but tipped with sharp spines, have a saponaceous property, and are said to be used by the Mexicans instead of soap.

"The cañon is a very dry place. Close to the stream as our camp was, the clothing, books, papers, etc., out-doors day and night, were never damp, and the earth a foot from the edge of the water seemed perfectly dry.

"The rocks were nearly all bare, but sometimes we found them with a growth of lichens. There were dried-up mosses and ferns in the crevices, making us wish we might have been there in the spring, when they were fresh and green; but there is no such

luxuriant growth of moss as is found in similar places in New England.

"We kept a 'thermometer report' for a local paper, having our thermometer hung above the table in a convenient place for taking observations at meal-times. Ninety-two degrees was the highest temperature we had at noon, and forty-seven was the lowest at seven o'clock in the morning. These figures were exceptional, the usual range being from sixty to eighty. The coolest mornings we sat by a camp-fire until the sunshine reached our camp, when fire was no longer necessary. On the warmest days our favorite seats were the shadiest rocks very near the water. Four thousand feet above the ocean we thought the fogs that cover the valleys so much of the time would not reach us; but one morning at six o'clock the housekeeper came into the tent singing, 'When the mists have cleared away,' and we looked out upon a dense gray wall shutting us in on every side from even the nearest hills. Three hours later nothing remained of it but a few curling cloud-wreaths on the mountain-peaks. Several times the early risers looking down the cañon saw the fog-bank coming up, but only once more did it reach us during the ten weeks and a half of our stay. It was the rainy season over to the east of us in Arizona, and sometimes our beautiful blue sky was made more beautiful by gray or white banks of cloud that rose above the mountains and floated over the cañon, falling once in showers that astonished us, for the oldest inhabitant 'never saw rain at this time of the year.' . . .

"There are sycamores all through the cañon, growing most abundantly in the ravines or little side cañons where the brooks come down to join the larger stream. Their white trunks, twisted in fantastic forms, and the weird mistletoe drooping from the boughs in great bunches, make them the strangest-looking trees in the cañon. The mistletoe seems to prefer the sycamore, though it grows sometimes in the alders. Probably the live-oak, with its glossy, dark-green foliage and graceful shapes, is the prettiest tree. The California bay, or laurel, which may be called a tree from its size, though usually growing in bushy form, is beautiful in color, and is a favorite because of its fragrance. The children gathered wild cherries from a shrub that bears shining, prickly leaves; but the fruit, of about the size and color of some cultivated cherries, is mostly stone and skin. The low growth of shrubs that covers the

gentler slopes of the mountains—the chaparral—is made up of the grease-wood, mountain-mahogany, buckthorn, cherry, manzanita, *herba santa*, or 'mountain balm,' from which a medicine is prepared for pulmonary affections, and a few others, the names of which we did not learn. Poison-oak grows luxuriantly in places, as some of the campers learned by painful experience, and is almost the only shrub that shows red leaves at the approach of autumn.

"Some of the young men found amusement in making canes of various woods. The manzanita has a red bark, almost black when dry, and very pretty when varnished. It is a little the most choice for canes, because it is so difficult to procure a straight one. The Mexicans have a saying to the effect that it is harder to find a straight manzanita than a perfect woman. It is one of the prettiest shrubs on the mountain-slopes, growing in rounded, compact, bushy form, and having numerous small, very light-green leaves, contrasting well with the red bark. The mountain-mahogany makes good light-colored canes, the sap-wood being nearly white notwithstanding its name, and it takes a fine polish. Grease-wood is easily worked. The young physician carried away a large collection of canes, enough apparently to supply all his friends with souvenirs of the cañon. The amateur artists find pieces of rock of proper size and shape for paper-weights, and paint on them 'bits' of falls, trees, sky, rocks, hills, with perhaps a tent or two, to have something characteristic of the place. Excursions to the favored spots where the finest yucca for pincushions grows are usually among the last ones taken by camping-parties before they 'break camp.' In September the place begins to have a lonesome look. Drearier than an empty house is a deserted camp with its pile of smoke-blackened rocks and bit of rusty pipe that made the camp-'stove,' the cleared place where the tent stood, with perhaps a rustic chair or bed more or less dilapidated, the rubbish, including the old shoes, which gave out so surprisingly with the travel over the rocks, and 'the ubiquitous tin can' and the names carved on the smooth alders, telling of somebody's skill with the jack-knife.

"By the last of the month everybody else had gone, so we must follow, though the Invalid wanted to stay till the fall rains came. Reluctantly she left the cañon, looking back longingly all the way down at the rollicking stream and the tall trees with the blue, blue

sky above them, the rugged mountain-slopes, and the beautiful, dreadful rocks."

Anaheim Township—Westminster, Santa Ana, and San Juan Townships.

Like an L from an old-fashioned house, these four townships extend southeast from the main body of the county. Santa Ana and San Juan Townships are bounded on the north by San Bernardino County. San Juan Township is bounded on the southeast by San Diego County. Thus we have Soledad Township, the northern part of Los Angeles County, bounded by Kern County and San Juan Township, the southern part of the county reaching to San Diego County. These two boundaries are one hundred and twenty miles apart. All of these townships have the Pacific Ocean for their southwestern boundary. These contain an aggregate area of four hundred and fifty-seven thousand acres.

Like all the rest of Los Angeles County, there is in these four townships a wonderful diversity of products. An immense cornfield and a beautiful orange-grove can frequently be found within a stone's throw of each other, while the apple and the pear, the lemon and the lime, the raisin-grape and the wine-grape, beets and pumpkins, barley and wheat, cattle and sheep, honey and butter, horses and poultry, pomegranates and figs, all unite to swell the income of the land-owner.

The centers of population in these townships are Anaheim, Westminster, Orange, Tustin, Santa Ana, and San Juan-by-the-Sea.

ANAHEIM.—Anaheim is the oldest of these towns, and is known as the "Mother Colony." The following interesting description of the founding of this town is by Major B. C. Truman, and was first published in the New York "Times":

"One of the most interesting places in Southern California, or in fact in the world, that I have visited is Anaheim, about twenty-eight miles from the city of Los Angeles. Wine-making has been, is, and always will be, the leading industry of Anaheim. The light soil has been proved, by nearly thirty years of experience, to be well adapted for the successful growth of the vine. Although Mr. Wetmore, who is very good authority generally, believes that the Berger will not do well in Anaheim, it is well known that the Mission, Zinfandel, Black Malvoisie, Mataro, Trousseau, and Golden Chasselas, are as successful there as in any portion of the State.

"It was for the pursuit of this industry that Anaheim was first organized about thirty years ago, and I believe its establishment as a colony was one of the first subdivisions of large tracts of land and improvements by water systems in the State. It was projected in 1857 by a party of wealthy Germans of San Francisco, who conceived the happy idea of converting some portion of Los Angeles County into a collection of homes and vineyards for a certain number of the industrious and deserving of their race, and at once formed themselves into an acting body with the title of the Los Angeles County Vineyard Association. After mature deliberation, the association resolved to employ a competent and proper person to select a site and make necessary arrangements for the purchase of a thousand acres of land somewhere between the city of Los Angeles and the sea, with a view to water, soil, and climate. The surveyor of the county was selected as superintendent, and was at once instructed regarding the general order of the original plan of the projectors, and empowered with authority and furnished with funds to erect a vineyard or a collection of vineyards, the details of the erection of said vineyards to be entirely according to his own taste, inasmuch as they should not fail to correspond, on the whole, with the plan proposed and agreed upon by the association. The site selected was a part of the Rancho San Juan Cajon de Santa Ana. The superintendent engaged himself at the work he had proposed to perform, and purchased eleven hundred acres of land from Don Juan Pacifico Ondiveras, and divided it into fifty lots of twenty acres each, reserving a portion in the center for streets and public buildings. Before the end of the year the plat had assumed a tangible shape. The entire site was fenced with willows, the boundaries of the twenty-acre lots were made and fenced, ditches were con-

structed, and four hundred acres of vines were planted before the expiration of the second year. Eight acres in each lot had been successfully planted with grapes, leaving the balance (twelve acres) for agricultural purposes, pasture, etc. Toward the close of 1859 the superintendent had successfully carried out the plan of the association at an expense of seventy thousand dollars. The final action then took place on the part of the society, which was to settle some German person upon each of the vineyards on the payment of fourteen hundred dollars, just one fiftieth of the aggregate cost of the whole, the selection of each vineyard to be made by drawing lots, each person to receive in addition to his vineyard a town-lot, leaving fourteen for public purposes. Two thirds of the entire plat were at once taken up, and gradually the whole number was converted into many little German homes, containing a happy and thriving community."

Anaheim, during these thirty years, has continued to be pre-eminently a vine-growing and wine-manufacturing town. There are now about fifty wineries in Anaheim and its immediate vicinity. The business of wine-making has always been in the hands of the German colonists, and they have made money steadily almost from the beginning. Many have grown rich. It is no credit to a man to say that he has made a fortune through speculation in real estate. It simply means that he has gambled on the fluctuations in property and won, but when it can be said that a community has grown rich from the products of the land, then eulogies may be justly pronounced on both people and soil.

The residents of Anaheim have continued year after year constant in their work, and wholly unmindful of the boom and speculating fever of outside places.

Their homes were made comfortable, flowers were kept beautiful in their gardens, and the pepper-tree, the sycamore, and the acacia shaded their sidewalks, but there has not been the spirit of what is known as public improvement.

When the Southern Pacific Company wanted to give them the boon of a railroad, and asked for right of way

and ground for a station in the center of the town, they answered: "No; we do not want our vineyards cut in two by a railroad."

"It will double the value of your property."

"Will it double the number of tons of grapes our vineyards will produce? We do not want to sell our vineyards, consequently, the increased valuation simply means increased taxation and not increased production." The railroad skirted around the town, the station was located outside of the town limits, and the German was happy.

Such has been the happy, quiet, prosperous life of the Anaheimer, but lately his equanimity has been seriously disturbed by the advent of another railroad. The California Central now startles the Anaheim chicken from its roost.

The Yankee has stepped into the arena, and Anaheim, in spite of its original industrious citizens, bids fair to become a city. It is twenty-eight miles from Los Angeles, with which it is connected by the Southern Pacific Railroad. It now has a population of thirty-five hundred, and is growing rapidly.

Two miles from Anaheim is the prospective town of FULLERTON, named for Mr. George H. Fullerton, a Los Angeles capitalist. Fullerton is on the California Central Railroad, and in the midst of a rich territory. It contains the usual complement of hotels, churches, school-houses, and stores.

WESTMINSTER is eight miles southwest of Anaheim, toward the ocean. It was started as a Presbyterian town, and the following sketch, from the Anaheim "Gazette Pamphlet" of 1879, gives an excellent general idea of the place:

"Westminster was started as a colony enterprise, by the Rev. L. P. Webber, in the fall of 1871. He selected a tract of level land between Anaheim and the ocean, comprising about eight thousand

acres, afterward enlarged to ten thousand acres, and endeavored to call together persons who would heartily co-operate in church, school, and social affairs, so as to get all the advantages of an old settlement from the beginning. After his death, in 1874, his work was continued, and the present status of the place is as follows:

"The original tract and addition is all sold and occupied in farms, mostly of forty acres each. The adjacent country has all been occupied, and a Westminster Township organized with a population estimated at about two thousand. There are four school-districts, viz., Westminster, Las Bolsas, Garden Grove, and Alamitos. In the village are three neat church buildings, all complete and free from debt, which testify to the character of the people. They belong, respectively, to the Presbyterian, Methodist, and Congregational churches. Their spires can be seen from a long distance on the plain. In the village are also three stores of general merchandise, two smithies, one wagon-shop, one harness-shop, tin-shop, milliner, shoemaker, etc.

"About two hundred and fifty artesian wells supply abundance of pure, cool water for all purposes, including irrigation, and their number can be indefinitely increased. Probably no other section of the United States has so many flowing wells. This constitutes the distinctive feature of this section.

"Barley averages about twenty centals to the acre; corn produces from forty to one hundred bushels per acre, according to quality of land and care of cultivation; potatoes are raised in large quantities, and are very profitable. The soil is a sandy loam, varying from light to heavy, and very rich. The presence of alkali in the lower lands is an annoyance and an evil, but it has been demonstrated that cultivation and drainage will relieve this, the only drawback in the midst of other advantages. Stock, especially hogs, are profitably raised. Several packing-establishments are doing a large business, increasing yearly, in bacon, hams, and lard. In this direction there is room for indefinite expansion, with sure profits to men who understand the business. Several large dairies supply butter to the surrounding towns and to Los Angeles. A vegetable-farm sends its products in every direction.

"Westminster makes no specialty of semi-tropical fruits, but lovers of trees, and of the profits of them, have an advantage here of making orchards, of apples especially, that will vie with the

neighboring orange-groves in yearly money returns, with less outlay and less delay. Our apples are already celebrated for good and keeping qualities, and the trees are very productive. Westminster nursery, exclusively for the northern fruits, supplies demands in this direction, and its trees have a well-known reputation for quality and growth. The few old bearing apple-trees here fully confirm all hopes of the health and profitableness of this branch of farming.

"The climate is all that could be desired, a refreshing sea-breeze tempering the heat of summer. The sea, five miles away, gives opportunity for daily baths."

ANAHEIM LANDING is four miles from Westminster and twelve miles from Anaheim. It is an interesting point for the lover of the ocean, and is also a place of considerable commercial importance. It is the ocean outlet for the products of this neighborhood. There is here a wharf and warehouse. In the vicinity of Westminster raising corn and hogs is very profitable. Thomas Edwards, in one year, cleared above his expenses of living and all other expenses over ten thousand dollars off of two hundred acres of corn. Land here averages cheaper than most other parts of the county.

GARDEN GROVE, a village close to Westminster, is the center of a community of farmers.

Orange, Santa Ana, and Tustin.

Orange, Santa Ana, and Tustin form the angles of a triangle. Santa Ana is three miles from Orange, and two miles from Tustin. They are connected by street-railways, railroads, and by delightful drives. Together they form one continuous avenue lined by homes, surrounded by orchards and vineyards, with three business centers.

ORANGE is delightfully situated near the foot of the Santa Ana Mountains. Here and in the vicinity the fruit for which the town is named reaches perfection. The an-

nual profit from a few acres of oranges here sounds fabulous.

An acre of ground will support seventy-five trees, and these, after a few years in bearing, will yield an average income of $675 per year. Orange has an excellent hotel, and a large school-house. There are Christian, Methodist Episcopal, and Presbyterian churches.

But Orange has become most noted for its raisins. It is the greatest raisin-producing section in the United States. While Anaheim—five miles away—is a German, wine-making community, Orange is an American, raisin-producing community. The white Muscat grape, which is here used in raisin-curing, matures at least three or four weeks sooner than in the San Gabriel or Los Angeles valleys.

W. J. Shanklin, late Surveyor-General of the State of California, in a note to the Orange "Tribune," says: "With good care the yield of one-year-old vines in this vicinity will amount to $25 per acre, the second year $50 per acre. Vines continue to increase their yield until the fourteenth year, when they are considered in full bearing, and will yield from $200 to $300 per acre."

Mr. Robert McPherson, the greatest raisin-producer in the United States, in a paper before the Los Angeles County Pomological Society, said:

"The importance of our raisin industry is such that it should command the careful consideration of the best minds of our country. This importance is felt not only in the fact that it is an industry which may support an immense number of people, but it now has and will have much to do with the health of our whole country. This latter point is well worth the examination and study of the most scientific minds, as the result of their investigation of the subject would be of great benefit, by proving the health-giving properties of our raisin-grapes. It is an established fact that where the best raisins are produced there is the best place for people suffering from lung or bronchial affections. It is known, too, that in cases of exhaustion, a handful of raisins will do much to revive sunken

energies; and it is true, too, that where the nervous system has been depressed for a long time, the continued use of raisins will very much improve its tone. There is high authority on this subject, and for the benefit of both producers and consumers this subject should be studied, and the knowledge acquired and diffused all over the country. Were this properly understood, the consumption of raisins would be very much greater than at present. Among ourselves and in our own families, if we would put them into more general use, we would more thoroughly realize the benefit. Let any one try them when on a camping trip. A handful of raisins, a piece of bread, and a cup of water is relished, and work can be performed on such a diet as easily as upon a diet of animal food. I would not adopt a vegetarian system, but I believe that much benefit would result from a more liberal use of raisins in our diet."

In 1875 the California crop of raisins amounted to 11,000 boxes of twenty pounds each; in 1876, 19,000 boxes; in 1877, 32,000 boxes; 1878, 48,000 boxes; 1879, 65,000 boxes; 1880, 75,000 boxes; 1881, 90,000 boxes; 1882, 115,000 boxes; 1883, 125,000 boxes; 1884, 175,000 boxes; 1885, 500,000 boxes; 1886, 703,000 boxes; and the crop of 1887 is estimated at 1,000,000 boxes. A large proportion of all this output is from the vicinity of Orange.

One mile north of Orange is the raisin establishment of McPherson Brothers. In the center of this great enterprise is the village of McPherson, a collection of homes, a town hall, and a store for the accommodation of those employed in the raisin business.

One mile farther north is the beautiful Quaker village of

EARLHAM.—The Quakers of the United States seem to be in great numbers looking toward Los Angeles County. They now have comfortable, attractive meeting-houses at Pasadena, Whittier, and Earlham.

Two and a half miles north of Orange is the Santiago Cañon, one of the most beautiful, romantic recesses in the mountains that the convulsions of nature have ever produced.

The tourist can spend a week in this cañon with pleasure and profit. The invalid can well spend months camping under oaks and pines beside the musical stream that runs down this great gash in the face of the earth.

SANTA ANA.—Three miles from Orange and thirty-four miles from Los Angeles is the largest town in Los Angeles County south of the city of Los Angeles. It is ten miles from the ocean, and is the terminus of the San Diego branch of the Southern Pacific Railroad. It is also on the Riverside branch of the California Central, and will also be on the projected branch of the California Central that connects Los Angeles and San Diego.

The Santa Ana Valley, in which these three towns are situated, contains about five hundred square miles and is traversed by the Santa Ana River. The river furnishes the most of the water for irrigation, but the water for domestic purposes in Santa Ana is piped from artesian wells.

There are four hotels, numerous secret societies, nine churches, and three newspapers—the "Blade," the "Standard," and the "Herald." On January 1, 1887, the Santa Ana "Standard" reported the following improvements in that city since January 1, 1884 :

Two hundred and twelve residences	$250,000
Brick business-houses	150,000
Two brick hotels	60,000
Two frame hotels	15,000
Two churches	7,000
Two packing-houses	5,000
One planing-mill	10,000
Gas-works	22,500
Street-railway	20,000
Other improvements	25,000
	$587,000

During 1887 electric-light works were established, and much greater improvement has taken place in all directions

than ever before in the same length of time. Santa Ana has about four thousand inhabitants.

TUSTIN is the gem of this valley. It is two miles southeast of Santa Ana, and is the center of a community noted for their culture and industry. Here are broad, shaded avenues, flanked by beautiful residences, surrounded by and containing all that wealth and intelligent taste could desire.

Had Dr. Johnson described Tustin and the valley it is in, he would have pictured a much more attractive scene than the classic Happy Valley wherein dwelt Rasselas, the Abyssinian prince. We read that in that Happy Valley the trees dropped ripe fruit in the lap of Mother Earth every month in the year. So it is in Tustin. In the winter there are the orange and the lemon; in the spring, the apricot, the peach, and the nectarine; in the summer, the apple, the pear, and the plum; and autumn brings the ripe, rich, purple clusters of grapes. There is one great difference in these valleys.

Dr. Johnson says in the Abyssinian Valley the people wanted to get out, but could not. While in the Tustin Valley they can get out but do not want to.

The seaport nearest to these towns is NEWPORT HARBOR, which has become quite a local shipping-point. It is now in the hands of capitalists who will soon make it a first-class harbor. There are several points on the ocean in this vicinity where people camp, in order to enjoy surf-bathing.

San Juan.

Los Angeles County, south of Santa Ana and Tustin, consists almost entirely of immense ranches, which are gradually being subdivided into small farms. Great bodies of land and railroads are incompatible. All intelligent railroad managers encourage small farming. The more farms

the more freight and passengers, while a ranch of ten or fifteen square leagues means little revenue for railroads, no schools, no churches, and no hotels. The California Central, about completed *via* Santa Ana to San Juan-by-the-Sea, is projected to San Diego; the Southern Pacific will also soon traverse this region. Real-estate syndicates, the forerunners of development and prosperity, are buying up and subdividing the large tracts.

SAN JUAN CAPISTRANO is the old Spanish town at the mission of the same name, which was founded in 1776. The building, completed thirty years later, was built of stone and cement, in a cruciform shape, with an immense dome, and was at the time of its completion the finest church in California. In 1812 an earthquake caused the top-heavy dome to fall in upon the assembled worshippers, and forty-four people were killed. Since that time, even to the present day, services are regularly held in a supplementary building. The mission was named in honor of the priest who, in the fifteenth century, headed the movement that caused the Turks to be driven out of Belgrade.

The village of San Juan, together with the mission, is an interesting point to visit. Here are productive olive, orange, and fig orchards, while the palm, here and there, adds to the picturesqueness of the scenery.

SAN JUAN-BY-THE-SEA, is the musical name of the new town laid out on the sea-shore, two and a half miles away on the line of the California Central Railroad. Fifty years ago Richard Dana visited this romantic point, and in his "Two Years Before the Mast" describes it as follows:

"San Juan is the only romantic spot in California. The country here for several miles is a high table-land, running boldly to the shore, and breaking off in a steep hill, at the foot of which the waters of the Pacific are continually dashing. For several miles the water washes the very base of the hill, or breaks upon ledges or

fragments of rocks which run out into the sea. Just where we landed was a small cove or 'bight,' which gave us at high tide a landing-place between the sea and the bottom of the hill. Directly above us was the perpendicular bluff nearly two hundred feet high. We strolled about, picking up shells and following the sea, where it tumbled in, roaring and spouting among the crevices of the great rocks. The rocks were as large as those of Nahant or Newport, but, to my eyes, more grand and broken. Besides, there was a grandeur in everything around, which gave almost a solemnity to the scene; a silence and solitariness which affected everything. Not a human being but ourselves, and no sound heard but the pulsation of the great Pacific, and the great steep hill rising like a wall, and cutting us off from all the world but the 'world of waters'! I separated myself from the rest, and sat down upon a rock, just where the sea ran in and formed a fine spouting horn.* Compared with the plain, dull, sand beach of the rest of the coast, this grandeur was as refreshing as a 'great rock in a weary land.' My better nature was strong upon me. Everything was in accordance with my state of feeling, and I experienced a glow of pleasure at finding that what of poetry and romance I ever had in me had not been entirely deadened by the laborious and frittering life I had led. Nearly an hour did I sit lost in the luxury of this entire new scene of the play in which I had so long been acting. Rejoining the crew, we went to the top of the hill. Here the country stretched out for miles, as far as the eye could reach, on a level, table-like surface, and the only habitation in sight was the white mission buildings of San Juan Capistrano, distant about three miles, in a lovely vale. Standing on the edge of the hill, and looking down the perpendicular heights, the sailors

> "'. . . . That walked upon the beach
> Appeared like mice, and our tall, anchoring bark
> Diminished to her cock; her cock a buoy,
> Almost too small for sight.'

"It was really a picturesque sight; the great height, and the continual walking to and fro of the men, who looked like mites on the beach."

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* In memory of the above writer, this prominent headland on the west of San Juan is called Dana's Point.

San Juan-by-the-Sea is already a favorite resort of many. The far-famed Modjeska comes here every year, accompanied by her husband, Count Bozante, and spends a few weeks hunting, fishing, riding, and bathing. Modjeska's home is a beautiful mountain retreat near Anaheim, and her summers are seasons of delightful rest and recreation passed at her home and at San Juan-by-the-Sea.

The hot springs are in the mountains, twelve miles from San Juan. The territory of twenty-five miles of fertile soil between San Juan-by-the-Sea and Santa Ana will doubtless be the scene of great activity in the near future. The article in another part of this work, entitled "Ten Acres enough to Support a Family," is capable of confirmation on any of this land.

This closes a glance at Los Angeles County. Many points have not been touched. There are coal-mines in the vicinity of Santa Ana, silver-mines in the vicinity of Orange, San Gabriel, and Lang's Springs. There are bee-ranches in all the mountain cañons, producing honey that is sent all over the civilized world; * there are asphaltum-

* The quantity of honey produced in Los Angeles County may be better comprehended by the following correspondence between a Boston tourist, who made a flying visit to California in one of the Raymond excursions, and a firm of commission-merchants doing business in Los Angeles. The date and language may not be exactly as the transaction occurred, but the facts are as stated:

BOSTON, *November 10, 1880.*

Messrs. Woodhead & Gay:

Ship at once all the honey you have on hand, per fast freight, to my address. L. BEANS.

LOS ANGELES, *November 17, 1880.*

L. Beans, Boston:

We hold thirty-six tons of honey subject to your order. To economize in the matter of freight-rates, we suggest that you delay ship-

beds, petroleum-wells, natural gas, and numerous other industries and resources that have scarcely been mentioned. Special articles on some of these subjects will give all information desired.

Mineral Springs in Los Angeles County.

SANTA FÉ SPRINGS (FULTON WELLS).

These have been mentioned casually in the course of the description of the county, but it is deemed best to mention them here separately. Probably the most famous and the best known are the Santa Fé Springs, formerly known as Fulton Wells. Here are several artesian wells, from which waters rich in medicinal virtues constantly flow. These waters are so near Los Angeles that many people from that city are constantly in attendance. There are numerous well-attested cases of remarkable cures.

In one gallon of the water there is 2·20 grains bicarbonate of soda, 12 grains bicarbonate of lime, 16·50 grains bicarbonate of magnesia, 13 grains bicarbonate of iron, 90 grains sulphate of soda, 10·40 grains chloride of sodium, 30 grains silica, and a large percentage of iodine and potash. There is also quite a volume of sulphureted hydrogen gas and carbonic gas.

Cases of rheumatism, diabetes, eczema, psoriasis, acne, dyspepsia, and scrofula are specially benefited by these waters.

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ment for a few days, until we can get four tons more, and thus make even car-loads. WOODHEAD & GAY.

WESTERN UNION TELEGRAPH OFFICE,
BOSTON, *November 17, 1880.*

To Messrs. Woodhead & Gay, Los Angeles:

For Heaven's sake, hold consignment! Wanted only two or three gallons for family use. L. BEANS.

Fourteen words. Paid.

The distance from Los Angeles is twelve miles by the California Central Railroad, while the nearest station on the Southern Pacific is Norwalk, two miles away.

SAN JUAN SPRINGS.

For many years the San Juan hot springs have been noted for curing rheumatism and syphilis.

They are sixty-five miles from Los Angeles, and there has been no railroad nor hotel near them, yet people in great numbers are constantly making pilgrimages to this far-away place.

There is no hotel, but the patients have tents or cheap houses to live in during their treatment.

Bulletin No. 32 of the United States Geological Survey gives the following analysis * of the main spring at San Juan :

	Parts in 100,000.
Sodium carbonate	11·10
Sodium sulphate	Trace
Sodium chloride	10·53
Potassa	Trace
Lime	Trace
Magnesia	Trace
Lithia	Trace
Silica	7·66
Total	29·29

Mud-baths are considered very efficacious, and, as there are no permanent buildings, these anxious seekers after health improvise mud bathing-houses of a primitive type. There are over a dozen of these springs spread over an acre of ground, and another hot spring, known as McKnight's, a half-mile away. There are also cold springs near by.

The temperature of the hot springs is 135° Fahr. They are fourteen miles from San Juan-by-the-Sea. For the

* Oscar Loew, analyst, 1876.

present, the best means to reach them is to San Juan-by-the-Sea by the California Central, and from there by team.

LANG'S SPRINGS,

Forty miles north of Los Angeles, at Lang Station, on the Southern Pacific Railroad, have attracted considerable attention lately.

WHITE SULPHUR SPRINGS.

Southern California is pre-eminently noted for the variety of its medicinal springs, both cold and hot. Besides those of a fluid nature, there are many hot mud-springs that are largely used in cases of acute rheumatism. Every county in Southern California has mineral springs of various kinds and utility. One of the most lovely and excellent groups of springs of a mineral character is the group of ten white sulphur springs at Lang, on the Southern Pacific Railroad, forty-three miles north of Los Angeles.

Lang is situated in the Soledad Cañon, deep in the beautiful recesses of the Sierra Madre, the charming empress of all mountain-chains. The cañon was named Soledad (solitary) long before the language of Milton and Shakespeare was spoken in its lonely wilds, when deer, lions, wolves, and bears made this their chosen home. Mr. Lang, the proprietor of the White Sulphur Springs, killed, in one of the branches of this cañon a few years since, the largest grizzly bear of which hunters have a history. The animal had been seen from time to time for a period of thirty years by the Spanish-Americans. His haunts ranged from the mountains of Monterey to the Sierra Madre, a distance of nearly three hundred and fifty miles. Hunters and hunting-dogs feared the monstrous monarch of the mountains who used to come at the proper time of year to feast upon the honey stored by the bees in the caves of the cañon. Meat poisoned with strychnine was placed in front of the

caves, but the poison had no effect on the "California King," as he was called, for he would eat the meat, and then help himself to honey, which may have been an antidote for the effect of the poison.

One day, John Lang found one of his favorite cows had been killed and partially eaten by the bear, whose monstrous feet betrayed him. Lang followed the animal through a trail made in the heavy brush by the powerful beast, till the monster scented him, and, turning back with a great roar of rage, marched toward his pursuer with stately steppings down the mountain-side. The sight would have been terrible to a man of ordinary nerve. The animal was larger than an ox, and with an open mouth, well armed with teeth, and a voice of thunder making the echoes answer from the cliffs, was no subject of delight. From the elevated position of the animal the upper part of his breast was exposed. In a moment more either the bear or the hunter must die, but a heavy shot from Lang's bear-gun sent an ounce-and-a-half bullet into Bruin's breast, severing an artery, from which a great stream of blood burst, while the giant creature, groaning with rage and disappointment, soon joined the land where the majority of bears have long since gone.

The size of this grizzly was immense. His feet were sixteen and a half inches long and nine and a quarter inches wide, while the weight of the monarch was twenty-two hundred pounds, making him the largest bear on record. The skin of the animal was exhibited in Woodward's Garden in San Francisco for a season, and then sent to England, where it was last heard from on exhibition at Liverpool.

The age of bold daring and adventure in Soledad has passed away. In place of bears, brigands, and Indians that made life full of unrest and alarm, and every settler's house an arsenal, all is beauty, pleasantness, and peace.

This passage through the mountains resounds to the roar of fifty trains of cars per day of the Southern Pacific system, that wind through its echoing rocks with persons and property for all parts of the earth, and under the greenwood shade sits John Lang and the wife of his youth and old age, breathing the odors of myriads of flowers and trees gathered from all parts of the United States.

Owing to the angles of the cañon no tempest sweeps through it, and, at an elevation of eighteen hundred feet above the sea, among grand gray rocks, no frost ever hurts the delicate plants and flowers. As the shadows of the mountains lengthen across the cañon at the close of the day, the western gate of the rocky passage glows with amber and rose color, while the eastern passage changes from blue to pale and fading emerald. The nobility of the scenery is not wasted upon the inmates of Lang homestead.

This clear, mild air, with its day-breeze from the west and eastern breeze by night, and in a frostless region, is about as near perfection as can be found, and a genuine paradise for invalids, who come from far to this delightful spot to regain their vigor from the pure water of a mountain torrent, the exhilaration of almost constant sunshine tempered with breezes from the pines and cedars and fragrant shrubs, with the crystal-white sulphur-fountains gushing out of the grand old mountains for the purification of the human system, a diet of venison and other game, and home-cooked food in abundance. This combination of advantages, added to fine scenery and rambles in shady cañons deep and wild, with frequent trains to the city and the sea, makes Lang Sulphur Springs in Los Angeles County the banner mountain-resort for health, happiness, and comfort.

Mr. Lang, who formerly experienced periods of sickness in other localities, has now lived seventeen years at the springs without sickness of an hour's duration.

The quality and virtues of the water of Lang Springs has been examined by many, including chemists and medical men. Among the recent physicians who have examined and certified to the rare virtues of this water, are Drs. Ellis, of London, England; Powers, of Texas; Sprague, of St. Louis; Fonda, of Albany, N. Y.; Barton, of New York; Kirkpatrick, of Los Angeles; McFarland, of Compton, Cal.; and Dr. Turner, of New Haven, Conn. The water is clear and cold, and contains sulphur, magnesia, and iron combined in most agreeable proportions.

San Fernando Sulphur Spring, on the south side of San Fernando Mountain, a few miles from the town of San Fernando, has quite a local reputation in rheumatism and skin-diseases. Bulletin No. 32, United States Geological Survey, gives the following analysis.* According to the latest theory of curing consumption, these waters containing carbonic-acid gas and sulphur would be very efficacious in lung-diseases:

	Parts in 100,000.
Sodium carbonate	6·21
Magnesium bicarbonate / Calcium carbonate	50·60
Sodium sulphate	23·87
Sodium chloride	Trace
Alumina	Trace
Silica	Trace
Phosphoric acid	Trace
Sulpho-hydric acid	5·00
Potassium	Trace
Lithium	Trace
Iron	Trace
Manganese	Trace
Organic matter	Trace
Total	85·68
Carbonic-acid gas	In excess

* Oscar Loew, analyst, 1876.

Four miles south of San Fernando is EL CINO SPRING. Bulletin No. 32, United States Geological Survey, gives the following analysis* of its waters. This spring has a flow of eighty-seven gallons per hour:

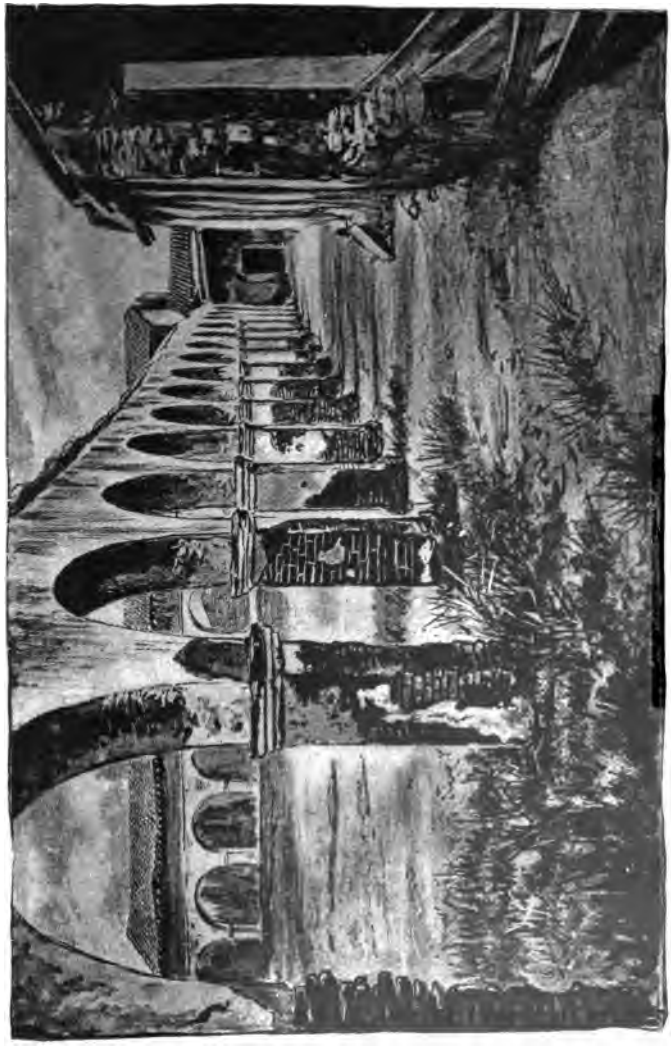
	Parts in 100,000.
Sodium carbonate	24·31
Magnesium carbonate.. } Calcium carbonate..... }	32·17
Sodium sulphate	54·46
Sodium chloride	2·93
Silica	11·50
Phosphoric acid	Trace
Sulpho-hydric acid	Trace
Potassium	Trace
Lithium	Trace
Total	125·37
Carbonic-acid gas	In excess

Helen Hunt Jackson and the Mission Indians.

When Father Junipero Serra first arrived in Southern California, May 14, 1769, he found about thirty thousand friendly, good-natured, intelligent Indians, divided into numerous tribes or bands, speaking thirteen dialects. They were after a few rebellions brought under the influence of the Church, and numerous missions established. These missions were invariably located in the most fertile and well-watered spots; and, as we go from ruin to ruin of these missions to-day, we are astonished that, with so brief an acquaintance with the territory, the good padre should have selected so unerringly the very best lands.

The Indians were soon all gathered around these missions, and worked as faithfully and obediently for these

* Oscar Loew, analyst, 1876.



Ruins of Mission, San Juan Capistrano.

Franciscan Fathers as though they had been slaves. They were taught to till the ground, make wine and oil, and raise

A Mission Garden.

all kinds of grain, and to follow many trades; and the women were taught to sew, to make baskets and beautiful lace, and thus in each one of these missions would be

found these natives employed in almost every industry of civilization.

The Indians were very devoted to the Church, and probably the years they were under the complete control of these Franciscan Fathers were the happiest in their history.

In 1834 the property of these missions was secularized by the Mexican Government, reserving to the Indians in indefinite terms what they would need for a home.* From this time on their condition became rapidly worse, and in 1852 the late Hon. B. D. Wilson, an old resident of Los Angeles County, made a report to the United States Government, showing the great injustice which had been done the Indians by the Americans. In 1881 Mrs. Helen Hunt Jackson had her attention specially directed toward these long-suffering people, and that winter she made a visit to their reservations and spent several weeks among them and in Los Angeles, getting facts in regard to their condition and needs. While in Los Angeles she received great aid in her work from Don Antonio F. Coronel and his talented wife. Mr. Coronel came to Los Angeles in 1834, and held various positions of honor while this city was under Mexican rule.

After it became subject to the Government of the United States he was elected and re-elected county assessor. In 1853 he was elected mayor of the city of Los Angeles. In 1867 he was elected treasurer of the State of California. He is now living at the corner of Seventh and Alameda Streets, in the adobe house so beautifully described by Mrs. Jackson.† Mr. Coronel's father taught the first school in Los Angeles, and Mr. Coronel himself is to-day the oldest

* See "Father Junipero and his Work," by Helen Hunt Jackson, p. 207, vol. iv, "Century Magazine."

† "Echoes in the City of the Angels," p. 205, vol. v, "Century Magazine."

living teacher in the State of California. In this house we were showed the table on which Mrs. Jackson transcribed the notes for her series of articles in the "Century Magazine" of 1883, as well as most of the data upon which she founded "Ramona." It is a typical Mexican home,

Hon. Antonio F. Coronel.

surrounded by wide verandas and tropical shrubbery. Inside are many interesting curios. Señora Coronel said recently, with tears in her eyes, that she well remembered Mrs. Jackson sitting in this room, with her hands folded, looking up with intense earnestness to the picture of Father

Junipero, and saying: "Ah! faithful, noble, dear old face; what an unselfish, devoted life you led! All I ask, is to be permitted to meet you in the other world." During her visits to Los Angeles she would every day drive from her hotel to this hospitable home.

"Near the western end of Don Antonio's porch is an orange-tree, on which were hanging at this time twenty-five hundred oranges, ripe and golden among the glossy leaves. Under this tree my carriage always waited for me. The señora never allowed me to depart without bringing to me in the carriage farewell gifts of flowers and fruit; clusters of grapes, dried and fresh; great boughs full of oranges, more than I could lift. As I drove away thus, my lap filled with bloom and golden fruit, canopies of golden fruit over my head, I said to myself often, 'Fables are prophecies. The Hesperides have come true.'" *

The information that Mrs. Jackson received from the Coronels was so full and complete that she gives an accurate description of the Camulos Ranch,† the home of Ramona, although she only spent two hours there.

The following letter describes Mrs. Jackson's only visit to this noted Spanish home:

"SANTA BARBARA, CAL., *January* 30, 1882.

"MY DEAR FRIENDS, MR. AND MRS. CORONEL: . . . I have now been one week in Santa Barbara, and am still homesick for Los Angeles. I have not as yet seen anything so fine as the San Gabriel Valley, and San Bernardino Mountains with the snows on the tops, and I have not found any one to tell me the things of the olden time so eloquently as you did.

"I have seen Father Sanchez, Father O'Keefe, and Father Francis, at the mission, and have obtained from their library some books

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* "Echoes in the City of the Angels," p. 205, vol. v, "Century Magazine."

† "Ramona," p. 19.

of interest. From the west window of my room I look out on the mission buildings. The sun rests on them from sunrise to sunset, and they seem to me to say more than any human voice on record can convey. You will perhaps have heard that I was so unfortunate as not to find Mrs. Del Valle at home, so I only rested two hours at her house and drove on to Santa Barbara that night. I saw some of the curious old relics, but the greater part of them were locked up, and Mrs. Del Valle had the keys with her.

"The most interesting part of my journey was San Fernando. There I could spend a whole day, and I must tell you of a mistake I made; perhaps if you see Mr. Pico you can rectify it for me. He said to me, when he was showing me some of the relics they have, 'Now, if you like, you can take some one of these things.' Of course I desired very much to have some of them; but I replied, merely out of the wish not to seem greedy or ungrateful: 'Oh, you are too kind to think of such a thing. I am afraid you ought not to give away any of them. Do you not rather prefer to keep them for the Church?' And then he did not again offer them to me, and I was all the rest of the time waiting and hoping that he would; but I came away without having the opportunity again to take anything. I suppose you will think I was very stupid. Indeed, I think so myself; but it is partly that I do not understand the customs of the Spanish people in regard to such things.

"If it should happen that you see any of the family, you can tell them of my regret for having made such a mistake, and that I would be very glad to have anything they would like to part with. One of the old candlesticks I would very much like to have, or one of the old books of St. Augustine I had in my own mind decided that I would choose.

"I also wanted very much to have a piece of one of the old olive-trees if I could have found one that had blown down—a straight section of the trunk sawed across, about six inches thick, to make a round block, polished, to set my stone-bowl on. The driver promised to take two of the old palm-leaves to you to keep. I thought you would like one; the wind had strewed the ground with them. But I think it rained so hard the days he went back he did not stop to look for palm-leaves.

"When I come again with the artist we will go to San Fernando. It is one of the places I desire to see twice.

"I send to you also by to-day's mail a copy of my little volume of poems. I thought that you would like that volume better than any other I have written. In a little more than four months I hope to see you again.

"Truly yours, and with many thanks for all your kindness,

"HELEN JACKSON."

Mrs. Jackson rapidly became enthusiastic in her work for the Mission Indians, and succeeded in securing the appointment of herself and Abbot Kinney, Esq., of Los Angeles, as special agents of the United States Government to investigate the condition of the Mission Indians. The following copy of a letter from Mrs. Jackson to the Commissioner of Indian Affairs, Washington, lucidly outlines the work she desired to perform:

"*To the Commissioner of Indian Affairs:*

"DEAR SIR: I thank you for the expressions of confidence in your letter of the —. I hope the results of my work may not disappoint you. I do not undertake the mission without misgivings; but I trust that my earnest intent in the matter will stand me instead of knowledge and experience, and I am sure that Mr. Kinney's clear-headedness and familiarity with the region will be an invaluable assistance.

"Since the receipt of your letter, I have given the subject much thought, and will now outline to you what I understand to be the scope and intent of our investigations:

"1. To ascertain the present number of Mission Indians, where they are living, and how.

"2. What, if any, Government lands remain in Southern California which would be available for homes for them.

"3. If there is no longer left enough Government land fit for the purpose, which I strongly suspect, what land or lands can be bought, and at what prices?

"4. What the Indians' own feelings are in regard to being moved onto reservations.

"So far as I can judge from what I saw and heard last winter, I believe that those Indians now living in villages would almost

rather die than be removed. Yet, in many instances, the lands on which the villages stood have been already patented to white men, and I understand that, in such cases, there is no possible redress for the Indians.

"Again, I am entirely sure that, to propose to those self-supporting farmers that they should be subjected to the ordinary reservation laws and restrictions, would be not only futile, but insulting. There is no more right or reason in an Indian agent, with the Indian agent's usual authority, being set over them, than there would be in attempting to bring the white farmers in Anaheim or Riverside under such authority.

"If this statement of what we are to do meets your views, will you kindly have it put into shape in form of a letter of specific instructions, such a letter as will give me full authorization under all circumstances, both with the Indians and at the land-offices of the different counties? There should be also a separate letter, authorizing Mr. Kinney joining me in the work, and guaranteeing his expenses. One item of expense has occurred to me since my letter to Mr. Teller, and that is of an interpreter. In visiting the Indian villages, we should be obliged to take an interpreter with us. This should be provided for. My own expenses I will rate, as I told Mr. Teller, at twelve hundred dollars. This will cover my going out and returning. If it takes longer and costs more, I will defray the remainder myself.

"I would like these letters in duplicate, to guard against accidents."

Mrs. Jackson and Mr. Kinney made their report, and the following letter tells how it was received, and gives us a glimpse of her passionate fondness for Indian relics; but it also shows, which is of still greater interest, her method of getting material for "Ramona," and proves that, in writing this story, she was actuated by a philanthropic impulse similar to that which impelled Harriet Beecher Stowe to write "Uncle Tom's Cabin."

"COLORADO SPRINGS, *November* 8, 1883.

"MY DEAR FRIENDS, MR. AND MRS. CORONEL: I send you herewith the very bad picture of myself, which I think you will wish

you had never seen. If you do, you are quite at liberty to burn it up.

"I had forgotten that I paid you the five dollars for the work done by the Indian woman. Keep it, if you please; there may be something to come from Father Ubach to pay expressage on, or there may be a box to be made to hold all my stone mortars, etc., which Mr. Bliss is going to get for me one of these years. It may be well for you to have a little money of mine on hand to meet these possible charges. I have asked Father Ubach to send to me to your care the old looking-glass frame which I forgot to put into the box he sent here; it was really one of the things I cared most for of all the relics promised me, and I was exceedingly sorry he forgot it. He, however, did much to atone for this by putting into the box a piece of one of the old olive-trees from the San Diego Mission. I shall present part of it to Archbishop Corrigan. I think he will value a piece of one of the fruit-trees planted by Father Junipero. I am sure you will have rejoiced at the removal of Lawson from the agency of the Mission Indians. I hope the new man will prove better; he hardly can prove worse. I wish we could have selected the new agent ourselves; but it was a political appointment, of which we knew nothing until it was all settled. Our report has been favorably received, and its recommendations will be incorporated in a bill before Congress this winter. I hope the bill will pass. But I know too much of Washington to be sanguine. However, if we had accomplished nothing more than the securing the appointment of Brunson & Wells, Los Angeles, as United States attorneys, to protect the Indians' rights to lands, that would be matter of gratitude. I suppose you have heard of that appointment. I hope through their means to save the Saboba village, San Jacinto, from being turned out of their home. Now, I am as usual asking help. I will tell you what my next work for the Indians is to be. I am going to try to write a novel, in which will be set forth some Indian experiences in a way to move people's hearts. People will read a novel when they will not read serious books. The scenes of the novel will be in Southern California, and I shall introduce enough of Mexicans and Americans to give it variety. The thing I want most, in way of help, from you, is this: I would like an account, written in as much detail as you remember, of the time when you, dear Mr. Coronel, went to Temecula and marked off the boundaries

of the Indians' land there. How many Indians were living there then? What crops had they? Had they a chapel? etc. Was *Pablo Assis*, their chief, alive? I would like to know his whole history, life, death, and all, minutely. The Temecula ejectment will be one of the episodes in my story, and any and every detail in connection with it will be of value to me. I shall also use the 'San Pasquale Pueblo History,' and I have written to Father Ubach and to Mr. Morse, of San Diego, for their reminiscence. You and they are the only persons to whom I have spoken of my purpose of writing the novel, and I do not wish anything said about it. I shall keep it a secret until the book is about done.

"I hope very much that I can succeed in writing a story which will help to increase the interest already so much aroused at the East in the Indian question.

"If you think of any romantic incidents, either Mexican or Indian, which you think would work in well into a story of Southern California life, please write them out for me. I wish I had had this plan in my mind last year when I was in Los Angeles. I would have taken notes of many interesting things you told me. But it is only recently, since writing out for our report the full accounts of the different bands of Indians there, that I have felt that I dared undertake the writing of a long story.

"I am going to New York in a few days, and shall be busily at work there all winter on my story. My address will be, 'The Berkeley,' corner Fifth Avenue and Ninth Street.

"I hope you are all well, and enjoying the same sunshine as last year. Mr. Jackson is well, and would send his regards if he were at home. Yours, always cordially,

"HELEN JACKSON."

Charles Dudley Warner, in a letter recently written from Los Angeles to the "Critic," says: ". . . It was my good fortune to see Mrs. Jackson frequently in New York, when she was writing 'Ramona,' which was begun and perhaps finished at 'The Berkeley.'

"The theme had complete possession of her; chapter after chapter flowed from her pen as easily as one would write a letter to a friend. . . . When she became in-

terested in the Indians, and especially in the hard fate of the Mission Indians in California, all her nature was fused for the time in a lofty enthusiasm of pity and indignation, and all her powers seemed to be consecrated to one purpose. . . . I am certain that she could have had no idea what the novel would be to the people of Southern California, or how it would identify her name with all this region, and make so many scenes in it places of pilgrimage and romantic interest for her sake."

Every reader of "Ramona" remembers the birth, christening, and death of "Blue-Eyes," and the following letter will show how Mrs. Jackson tried to get an Indian synonym for this name, but her efforts were in vain :

"NEW YORK, *February* 13, 1884.

"DEAR MR. AND MRS. CORONEL: I am glad you gave me my choice of the pictures; for the two I have taken I like, and the other two I think very bad. Mr. Sandham can have them. I have taken the two which show the side-view of your faces.

"I hope you are having better weather in Los Angeles than we have here. For three weeks we have scarcely seen the sun. Snows, rain, fogs, sleet, ice, have been our daily diet. It is far the worst winter I ever saw.

"Mr. Jackson returned to Colorado last month. I look for him here again in March.

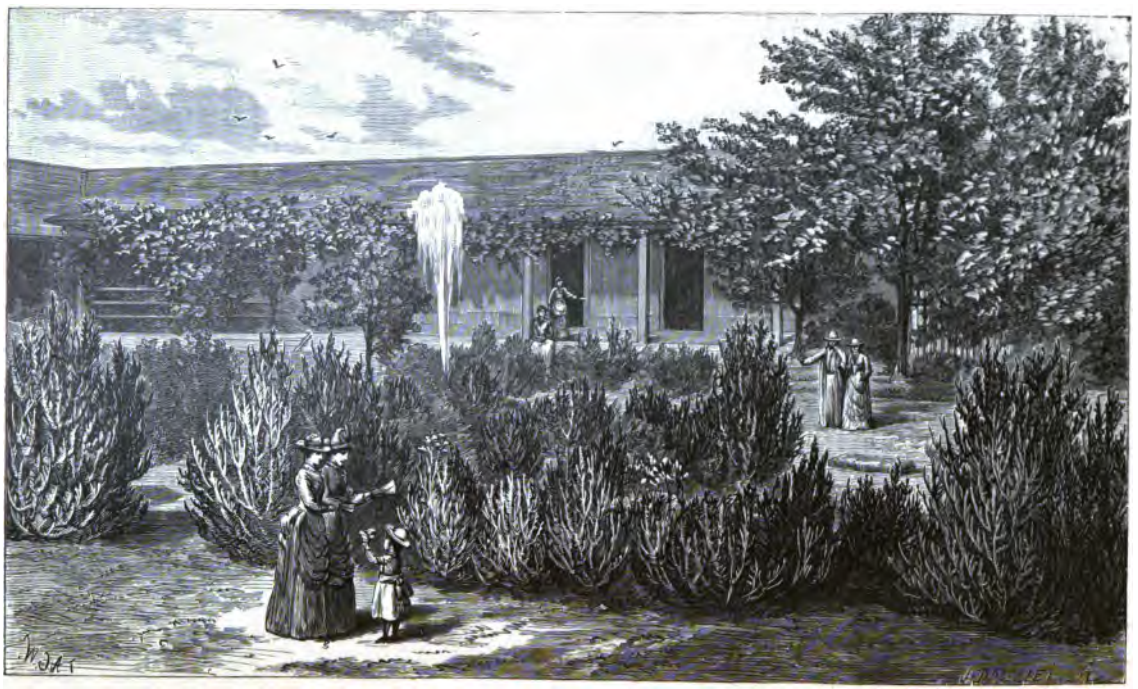
"I am still at work on my story. It is more than half done.

"I wish you would ask those Indian women, who made the lace for me, what would be in their Pala or San Luis Rey dialect, the words for *blue-eyes*. I want to have a little child called by that name in my story—if the Indian name is not too harsh to the ear. I often wish myself in Los Angeles, I assure you, in this horrible weather. Did you receive the copy of our report on the Mission Indians? I ordered it sent to you.

"With many thanks for the pictures, and warm remembrances to you both and to Miss Mercedes,

"I am always, yours truly,

"HELEN JACKSON."



Ramona's Home, Camulos Ranch.

The following letter is the beginning of the end. Mrs. Jackson never recovered from the accident here recounted.

Mrs. Jackson in this letter also pronounces for Cleveland and Hendricks and the Democratic party, although she had received her appointment and allowance for expenses from a Republican administration, and speaks of Senator Dawes as the Indian's friend :

"COLORADO SPRINGS, *September* 4, 1884.

"MY DEAR FRIENDS: I am sorry to tell you that the bad news you heard of me was true. On the 28th of June I fell from the top to the bottom of my stairs, and broke my left leg—a very bad break; the large bone crushed in for about two inches, and the small bone snapped short. When they found me the leg was doubled at right angles between the knee and ankle. Mr. Jackson thought when he saw it I would never walk again; but, on the contrary, I am going to have as good a leg as ever. A great triumph for a woman of my age and weight. I am on crutches now, and very bad work I make with them, I assure you. I am too heavy and too much afraid. But I have a wheeled chair, in which I can go all about the house, and on the veranda, and I have had an exceedingly comfortable and pleasant summer in spite of the broken leg, and by New-Year's the doctor thinks I will be walking well.

"The message from the Rincon Indians made my heart ache. I shall send it to the Indian Commissioner at Washington; but, as you say, we can not hope for much result from it. The firm of Brunson & Wells, lawyers in Los Angeles, were appointed last year, by our request, as United States attorneys, to act in all cases relating to Indian lands. It is a long time since I have heard from them. When I last heard, they hoped to save the Saboba lands for those Indians. It might be well for you to see them, and lay the case of these Rincon Indians before them. Say to Mr. Wells that I asked you to do so. You know that the time of the presidential election is now near, and at such times no man cares for anything but politics. If Blaine and Logan are elected, I shall fear a sad four years for the Indians. Logan is an Indian-hater. I do not know what the Democratic party would be on the Indian question. It could not be worse than the other, and it might be better. The only mes-

sage you can give to those Indians from me, is that I have sent a copy of their message to Washington, and that is all I can do. That my heart aches for them, and has never ceased to ache since the day I was in their village. That many good people are interested for their race, and are trying to accomplish something for their help; but the men in power in the Government change so often, it is hard to get anything done. And Congress (the great Council) will not give the money we ask for. If they could once be made to understand that everything depends on Congress voting the money for their relief, they would realize more that the officers of the Government are powerless to keep their promises. There are Indians starving to-day in Montana, because Congress last winter *cut down* the appropriations which the Indian Commissioner asked for for the year. You see when that is done, the Secretary of the Interior and the Indian Commissioner are utterly helpless. They have no way of getting money except by Congress voting it. I sometimes wonder that the Lord does not rain fire and brimstone on this land, to punish us for our cruelty to these unfortunate Indians.

"Another Commission is coming out to California this autumn to look after the Round Valley Indians. One member of it is Senator Dawes, who is a good friend to Indians. I have begged him to go down also into Southern California and see the Mission Indians. If he does, he will call on you. I have given him a letter to you. I never received the portraits of Father Junipero you speak of having sent me. Did you send them to this place, or to New York?

"Mr. Jackson is very well, and would desire his remembrances to you both if he were at home. But he is in Denver at present. With many thanks for your letter, and warm regards to you both, also to your niece, I am always, truly yours,

"HELEN JACKSON."

Mrs. Helen Hunt Jackson is dead, but her work goes vigorously on.

As a result of her efforts, a law was passed providing for a division of the reservation lands among these Indians, so that each one will have in his individual right one hundred and sixty acres, not subject to liens, mortgages, or debts of any nature for twenty-five years. There are in

this law various other important points. In June, 1887, an agent from Washington and several members of the Indian Rights Association from Los Angeles and Pasadena, had a great conference with the Indian chiefs, or captains, as they are now called, at the celebrated Pala Mission, to explain the provisions of this bill. These philanthropists went to Temecula, one hundred and three miles from Los Angeles, by the California Central Railroad, and from this historic point went with teams over an interesting mountain-road to the Pala Mission, twelve miles away.

This mission is situated in a fertile valley, surrounded by a stupendous wall of mountains. Only a small portion of the valley now belongs to the Indians. Even the old mission itself has passed into the possession of others. Here, where but a few years ago were Indians following almost every honorable industrial avocation, under the benignant rule of the Franciscan Fathers, all is now silence, ruin, and desolation.

But, while the mission and its immediate surroundings are thus neglected, there are around it several fruit and grain ranches in a high state of cultivation. At the date of this conference, the apricots and peaches were just ripe, and the orchards were radiant with luscious fruit, that bent many of the boughs almost to the ground. Early on the morning of the conference, the Indian chiefs began coming in from the various reservations ; the majority on horse-back, others in spring-wagons, but all well-dressed in the American style. There were captains and generals, quite a number of whom spoke English, Spanish, and three or four Indian dialects fluently.

There were among them several who might have been Allessandros but no Ramonas. The agent mounted a step of the old mission, and the Indians gathered anxiously around. Each one had hat in hand, and they all stood there in the hot sun, with bared heads, watching the agent closely

as he spoke, and then listening attentively to the Hon. A. F. Coronel, of Los Angeles, as he interpreted the agent's remarks. There were in this audience some noble faces, to whom the term "noble red man" could be fittingly applied.

One noticeable feature was their serious earnestness. They all remembered Mrs. Jackson, who made prolonged visits among them, and when the agent told them that he had promised Mrs. Jackson on her death-bed that he would go on with her work, they were visibly affected. Mrs. Jackson's name is familiar to almost every human being in Southern California, from the little three-year-old tot, who has her choice juvenile stories read to him, to the aged grandmother who shed tears of sympathy for Ramona.

At about the same time the Indians of the Pala Mission in San Diego County, one hundred miles south of Los Angeles, were talking of Mrs. Jackson's work and death, there was in progress the annual *fiesta* of the Del Valle family at Camulos, their beautiful ranch home, forty-five miles north of Los Angeles, in Ventura County.

Camulos is probably the only typical Spanish ranch now remaining in Southern California, and was wisely selected by Mrs. Jackson as the home of Ramona. Her description of this place is delightful reading, and prepares the visitor to some extent for the treat in store for him. The large, picturesque, adobe house is encircled by immense vineyards, miles of tall and shapely olive-trees, and beautiful orange-groves, with their bright-green foliage, half covering their golden treasures.

Mrs. Del Valle, a stately, entertaining widow lady, is surrounded by a retinue of servants, so large that, to care for them, she requires all the appurtenances of a village.

Here is the school for her servants' children, the storehouse where all supplies are doled out, the beautiful little

chapel in the garden where she has daily prayers, and the post-office through which their correspondence is sent and received.

Here is the primitive mill for crushing the olives to make the oil, the wine-press making the healthful claret for which the place is noted, the still where grape-brandy is manufactured, the long cellars in which the wine and brandy are stored, the warehouses in which are housed enough grain and bacon to withstand years of famine, and the extensive stables where are dozens of horses.

The annual *fiesta* is a gathering of the Del Valle family and a few invited guests that takes place in July, and lasts four days. The train from Los Angeles arrived about noon of the first day with twenty-five of the family and friends. Señora Del Valle stood at the entrance to the garden and welcomed each guest. The visitors were quickly conducted to their rooms, where water, comb, and brush soon removed all trace of the midsummer car-ride. Dinner was then announced, and Senator Reginald F. Del Valle, a prominent Los Angeles attorney, sat at the head of the table, which was under a shady arbor in the garden but a few steps from the chapel. Two barbecued pigs, done to perfection, formed the principal meat of this meal, but there were olives, cooked and pickled, various Spanish dishes, containing almost invariably *chilis* (red peppers) and olives, delicious dessert, claret and white wine *ad libitum*, and the regulation black coffee. Surrounding this table were members of numerous distinguished Spanish-American families. The two features that attracted the particular attention of an American were the gallantry of the men and the beauty and vivacity of the ladies.

The afternoon was spent by the guests hunting, riding, singing, reading, talking, and mountain-climbing, just as each one chose. In this way of entertaining, and yet giving each visitor perfect freedom to do just as he pleased,

the hostess and her daughters displayed rare tact. Watermelons and fruits of various kinds were always at hand.

At 7 P. M. another bountiful meal was served in the arbor, which was brilliantly lighted by lanterns fastened between the innumerable clusters of purple grapes that hung overhead. This time two roasted kids were served—and delicious they were. After an hour's walk, all gathered in the spacious parlor, and, with music on the piano, the organ, and the guitar, and vocal solos and choruses, time quickly sped. Fireworks in the garden closed the entertainment for the first day.

The next morning all were out bright and happy, and at breakfast, where everything was served with the usual profusion, the American would notice that olives were again eaten by all, which leads to a reflection in regard to the value of this ancient food.

"It took the English colony of India a century to find out that the strong meat-diet of the north used in the climate of India invariably produced a diseased liver and death. Now that they, learning by experience, are adopting the light vegetable diet of the natives, they endure the climate much better.

"The oil, which in southern latitudes has most generally taken the place of the animal fats, is the oil of the olive. It is lighter and less heat-producing than the oils or fats of animal origin. It is used in cookery, is an ingredient of every salad, and in the shape of the pickled fruit takes somewhat the place of meat upon the table. Its high nutritive value is shown by the fact that the laborers of the Riviera perform the severest toil upon a diet chiefly of black bread and olives.

"One who has never personally tested the olive as an article of food can hardly understand its value. The writer has frequently, for days at a time in the warm weather, almost lived upon bread and olives, feeling as well nourished as upon a meat-diet.

"The culture of the olive seems to be almost coeval with the races of the Orient. Under the shade of its fruit-ladened branches rested the patriarchs in the old tent of Syria. It accompanied the Græco-Latin in his migration along the shores of the Mediterranean.

It passed with the Roman arms to Gaul and Hispania, and crossing the ocean with the Conquistadors, adds its pale-green foliage to the verdure of every old mission-orchard from Vera Cruz to Monterey.

"It is no chance, no mere sentiment that thus made it, like the vine and the corn-producing plants, the companion of race-migration.

"Whenever we find a plant thus accompanying man for thousands of years in his migrations across oceans and continents, it is because of the positive utility of food-value which it is proved to possess for the human race.

"Somewhat of the extent to which that economic food-value is estimated by one nation may be surmised from the fact that in Italy the number of olive-trees under cultivation is one hundred millions, covering one million acres.

"It is a safe rule to follow, that the foods which a people have adopted after inhabiting for generations any especial belt of climate, are the foods best suited to the requirements of the system in that climate; that back of it is the working of some general law."*

After breakfast, an hour was spent by the good hostess and her Catholic guests in the chapel.

A fat, young steer was then lassoed by a *vacquero*, the aorta was dexterously severed with a knife, and then began some dissecting that would have surprised the most skillful anatomist. The skin was quickly and neatly taken off and spread out to protect the beef from the earth, the muscles were then, layer after layer, deftly removed, and in an incredibly short time this Mexican butcher had the meat ready for the fire.

A fire in a pit near by had been heating stones, which were now red-hot. Iron rods were laid across the pit, and the whole beef put on to roast for dinner.

The noon train from Los Angeles added materially to

* "The Anglo-Teuton and the Olive," by J. P. Widney, A. M., M. D. (See p. 82, "Southern California Practitioner," March, 1886.)

the number of guests, and seventy-five as happy people as ever lived sat around the heavily-laden table under the grape-vines. What a delicious meal that was! The eating was happily interspersed with laughter, conversation, and brilliant repartee.

After the dessert had been enjoyed toasts were in order, and among those to the Del Valle family, the State of Southern California, etc., a gray-headed Mexican gentleman, after delivering a fervid, eloquent eulogy, proposed a toast to the memory of Mrs. Helen Hunt Jackson, which was drank standing. How true the statement made on another page: "Mrs. Jackson is dead, but her work still lives in the hearts of the people of Southern California."

SAN DIEGO COUNTY.

San Diego County is nearly three times the size of Los Angeles County, having an area of 14,969 square miles (9,580,000 acres), and is nearly as large as Massachusetts, Connecticut, Rhode Island, and Delaware combined.

This great territory is bounded on the west by the Pacific Ocean, on the south by Mexico, on the east by the Colorado River, and on the north by San Bernardino and Los Angeles Counties.

San Diego County first became noted on account of the beautiful bay of that name, a land-locked harbor of inestimable value as an inlet and outlet to a vast interior country. This bay was discovered in 1542 by Juan Rodriguez Cabrillo, a Portuguese navigator in the employment of Spain. Sebastian Vizcaino surveyed and named it in 1602. Professor George Davidson, of the United States Coast Survey, says: "Next to that of San Francisco, no harbor on the Pacific coast of the United States approximates in excellence the bay of San Diego."

As the visitor comes into this beautiful sheet of water

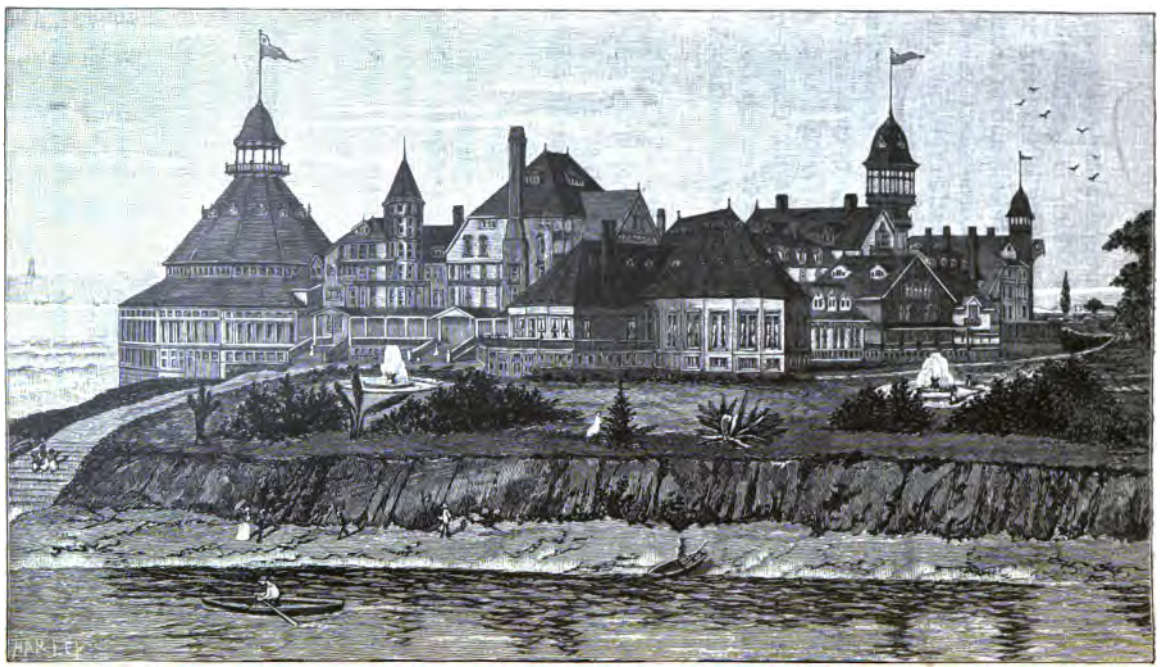
by sea from the north, he passes around a rugged promontory known as Point Loma, on which is located the United States Light-House. To the south is the point of the peninsula now known as Coronado Beach, and in front is this placid resting-place for the storm-tossed vessel. "What a beautiful sight!" is the exclamation that involuntarily springs to the lips.

This bay is about twelve miles long and one mile wide. If the visitor comes into the harbor by night, as many do who have first visited San Francisco and Los Angeles, he will be dazzled by the innumerable lights on Coronado Beach, and by the numerous electric lights from San Diego city, all giving a premonition of the commercial metropolis he is about entering.

Here there are none of the annoyances of lighterage that are encountered at San Pedro Harbor, but the gang-plank of the vessel lands one almost on the street-car.

CORONADO BEACH is the name of the peninsula that juts out in front of San Diego and National City, and gives them their excellent harbor and especially salubrious climate. This peninsula was purchased a few years since by a company, with E. S. Babcock, Jr., as president. They have already erected there the largest hotel in Southern California, and have sold millions of dollars worth of lots. To-day this peninsula is the site of one of the liveliest, prettiest towns to be seen in California. One year ago a barren waste; to-day a prosperous town with hundreds of pretty cottages, with beautiful shrubbery and flower-gardens, attractive parks, and delightful drives.

There are now on Coronado Beach several stores, several fine churches, and a good school-house. Arrangements have been made for the most complete historical and scientific museum on the Pacific coast, and added to these is Coronado Hotel, with its six hundred and fifty rooms.



Hotel del Coronado, Coronado Beach, with a glimpse of San Diego Bay.

NATIONAL CITY is near the head of San Diego Bay, at the terminus of the Southern California Railroad.

It is four miles from the business center of the city of San Diego, with which it is connected by a steam-motor street-railway and by the California Southern Railroad. In fact, National City can be said to be a part of San Diego, because it is almost a continuous town from one place to the other. Here are located the car-shops of the railroad, a carriage-factory, and an olive-oil factory.

Right here the value of this olive-oil should be impressed on the reader. Consumptives frequently find it far more beneficial than cod-liver oil; it is also a choice article for the table. There are but two brands of olive-oil on the market in the United States that should be used on the table or as a medicine. One is that made by Elwood Cooper, of Santa Barbara; the other, by Kimball, of National City. The writer of these lines knows the importance of this statement, and has tested and satisfied himself of the universal adulteration of imported oils. Not being adulterated, the olive-oil of Santa Barbara and National City is more expensive than the imported, the cost being from two dollars to two dollars and a half per bottle.

At National City, as at San Diego, the ship comes alongside of the railroad track. There is a weekly newspaper, a bank, and the usual number of stores and churches for a town of twelve hundred inhabitants. National City is noted for its oranges, lemons, apples, and pears.

The San Diego Land and Town Company are building a great dam in the mountains, six miles east of National City, to divert the waters of the Sweetwater River so that they may be used for irrigating purposes. This dam is of solid masonry, and is made of huge rocks quarried on the spot. It is forty feet thick at its base and three hundred feet long at the top. The dam closes the mouth of Sweetwater Cañon and makes a reservoir that covers one

thousand acres. The company claim that this reservoir will furnish abundance of water for National City, and irrigate twenty thousand acres of land in that vicinity. The motor-line that passes through National City extends southward through a beautiful country almost to the Mexican line.

City of San Diego.

This is the great city of San Diego County. Situated on one of the most perfect harbors in the world, with vessels unloading at its wharves from all the chief ports of civilization, the culmination of the Santa Fé Railway system that brings it into intimate relations with Chicago, New York, and Boston; planted on a series of hills that gently slope to the ocean; with a soil that produces almost everything desirable from a pumpkin to an olive; with business blocks which for elegance, solidity, and size are rarely surpassed; with a climate that is enjoyable and healthful both summer and winter; with every facility for boating, fishing, and hunting; with a population noted for culture and refinement; with schools, churches, and hotels that would be creditable to much larger cities; with commercial prospects of dazzling brilliancy—with all these attributes the visitor does not wonder when he finds that every one of San Diego's fifteen thousand inhabitants, from the infant just beginning to prattle to the great-grandmother who dozes away the sunny Christmas-day in her arm-chair on the veranda, has learned to sing her praises loud and long. It was here that Father Francis Junipero Serra founded, on the 16th day of July, 1769, the first of the series of missions that he established in California.

The visitor should have a view of the old ruins of this most ancient of California missions. They are on Presidio Hill, at "Old San Diego," a romantic spot, with its adobe buildings, palm-trees, and orange-groves.

Five years after the mission was founded here the location was changed to a point about six miles up the San Diego River in a very fertile valley. The ruins of these later buildings are well worth a visit. A drive from San Diego to the Presidio Hill and Old San Diego, then up the valley to the mission, and then to San Diego across the country, is full of delightful surprises.

San Diego was much involved in the war with Mexico. Among the several generals who were in San Diego during 1846 was General Emory, who reported that "the harbor of San Francisco has more water, but that of San Diego has a more uniform climate, better anchorage, and perfect security from winds in any direction."

In 1850 the population of San Diego was six hundred and fifty. The first newspaper—the "Herald"—made its *début* under the management J. Judson Ames, May 29, 1851. It lived eight years, and then from 1859 to 1868 San Diego was without an organ. The San Diego "Union" then appeared to voice the advantages of the land-locked harbor and the blissful climate.

In 1867 A. E. Horton bought nine hundred acres where San Diego now is, and laid it off in lots and began to boom the place. Mr. Horton is popularly called the father of San Diego. What a typical Western history he could give! How, when Scott promised to build a railroad to San Diego, his property became of great value; then Scott disappointed them and property went away down, so that Horton had to sacrifice block after block of his property, and he was looked upon as a poor, visionary old man. But again out of the rifted clouds the sun shone forth upon San Diego, and the Santa Fé Company came to San Diego with their railroad, and now Mr. Horton, although somewhat advanced in years, has again become rich, and the shrill whistle of the locomotive is music to his ears. Well may he feel rejoiced as he sits in his hill-side home that overlooks

city, bay, and Coronado Beach, and watches the city of his faith growing to such astonishing proportions.

The increase in values here has been remarkable, and people have become wealthy so suddenly that some of them became dizzy. Some amusing stories are told of men who made fortunes in this rapid manner. One man had it announced in a daily paper: "We are glad to learn that Mr. Smithson, one of our most enterprising citizens, has exemplified his usual free-handed generosity by presenting his wife with a magnificent thirty-five-dollar set of diamonds, and his daughter, Eilene, with a ten-dollar diamond ring."

Even the men who were dazzled at their prosperity soon settled down to work in an earnest way for the continuous upbuilding of their city.

San Diego is growing with most wonderful rapidity. Its population is doubtless fifteen thousand. The cost of buildings erected in 1886 was $1,998,944, while the building in 1887 has been far more. During the first six months of 1887 over fifty-five million feet of lumber were received at the San Diego harbor.

SCHOOLS.

There are fifteen teachers in the public schools, and high standard is maintained. There is a Catholic school and a kindergarten. The Methodist Episcopal Church, through the efforts of Rev. E. S. Chase and others, has secured a donation of four thousand lots with which to endow a college. This college will be located east of the town, adjoining the city park. The first building will be completed within eighteen months. The college will be under the charter of the University of Southern California, and will be known as the College of Arts. The Catholics have about completed arrangements to locate a college at Junipero, about seven miles north of San Diego.

CHURCHES.

The Methodist Episcopal, Protestant Episcopal, Baptist, Presbyterian, South Methodist, and Unitarian churches, all have places of worhip.

Bishop Fowler recently laid the corner-stone of a new Methodist Episcopal church in San Diego, and on the same day laid the corner-stone of a three-story brick business block that is owned by that church. This block will contain a lecture-hall, stores, and offices, and the rents are to go to assist weak churches in San Diego County.

Public organizations, societies, and orders are represented by a Chamber of Commerce, Public Library Association, Society of Natural History, Philharmonic Society, Young Men's Christian Association, branch of the W. C. T. U., Benevolent Association, Indian Aid Society, Fire Department, a company of the National Guard of California, athletic club and several social clubs, Masonic Lodge, Masonic Chapter and Commandery, Odd Fellows' Lodge, Odd Fellows' Encampment, Knights of Pythias Lodge, Uniformed Division and Section of Endowment Rank, A. O. U. W. Lodge, O. C. F. Lodge, two lodges I. O. G. T., and a post of the G. A. R.

The late James M. Pierce recently left one hundred thousand dollars to found a home for boys and girls. The trustees—Bryant Howard, M. A. Luce, and C. S. Hamilton —expect to begin active work on the buildings at an early date.

San Diego is a port of entry and United States military post, with custom-house and barracks. The "Daily Union," the "Evening Sun," and "The Bee," are the daily papers. There are four banks and three first-class hotels, the St. James, the Horton, and the Florence.

The San Diego Flume Company are building immense dams in the mountains, thirty-five miles away, at the head-

waters of the San Diego River, and are preparing to flume this water to San Diego and vicinity. They propose to furnish water to irrigate fifty thousand acres of land.

Every tourist should take the sixteen miles' drive to the monument that marks the boundary between Mexico and California. The light-house is also well worth visiting. Thus, with driving, fishing, and boating, the tourist can interest himself; but he will also find that city has pleasant social features, and he should not shut himself up like an oyster if he wishes to enjoy himself.

From San Diego East and North.

From San Diego eastward for twelve miles, rising higher, are the noted table- or mesa-lands, until suddenly a fertile valley of many thousand acres is reached. This valley is EL CAJON. There are here several thousand acres in raisin-grapes and other fruit. The town of Cajon has shops, stores, school-houses, churches, and several lines of telephone.

Eighteen miles northeast of El Cajon is NUEVO, with school-houses, shops, and post-office. This is the center of the Santa Maria Valley, which contains about fifteen thousand acres, while between the Santa Maria and El Cajon Valleys is the San Vicente with its four thousand acres. BALLENA is a pretty little village, with store, post-office, and school-house. It is four miles from Nuevo and thirty-five miles from San Diego, and has an elevation of twenty-five hundred feet above sea-level. Ten miles northeast of Ballena is the rich Santa Ysabel ranch of eighteen thousand acres.

Fifteen miles farther east is JULIAN, a flourishing mining-town with a population of one thousand. Julian is not only a mining-town, but is also the center of a good fruit and agricultural country. It is true, they have snow

and frost in this mountain town, and can not raise oranges and lemons, but the vicinity is noted for its apples and pears. Julian is four thousand two hundred feet above the sea, and for certain classes of lung-troubles is doubtless very desirable. It is soon to be connected with San Diego, sixty miles away, by a railroad, and then the whole country will doubtless receive a greatly increased population. Julian now has stores, public hall, blacksmith-shops, school-houses, quartz-mills, and a telephone line to San Diego.

Three miles east of Julian is the mining-town of BANNER, with its quartz-mills, school-house, etc. A short distance east of Banner the mountain-range is crossed, and the traveler looks down several thousand feet upon that great ocean of sand—the Colorado Desert. This immense barren plain occupies three fifths of the area of San Diego County. It is to this worthless waste that San Diego County is indebted for her incomparable climate.

A few miles north of Julian is Warner's Ranch, consisting of twenty-six thousand six hundred acres of valuable land, owned by ex-Governor John G. Downey, of Los Angeles.

Just west of Warner's Ranch is MESA GRANDE, with its cattle, hogs, bees, and mines. There are in the territory just traversed in coming from San Diego forests, rivers, and mountains, with many picturesque scenes and romantic spots. When the Julian Railroad is completed, it will be a region well worth visiting.

Starting again from San Diego, and going southeast through National City, the National Ranch, the Otay, Janal, and Jamul Valleys are all soon traversed. On, east of them, forty-five miles from San Diego, is POTRERO, an agricultural village. Fifteen miles farther east, almost on the Mexican frontier, is CAMPO, another agricultural village and trading-post. Cattle, horses, hogs, grain, hay,

and honey are the chief products. The fact that the honey-crop of San Diego County for 1885 was over 2,500,000 pounds gives some idea of the extent of this industry.

Going north from San Diego over the California Southern Railroad, the visitor passes through numerous sea-side villages, but the first place of importance is DEL MAR, a delightful summer resort. The beautiful ocean-beach, clean streets, and pretty cottages attract the eye. Del Mar is twenty-three miles from San Diego. Here are bath-houses and excellent hotels. The proprietors will not sell a lot except the buyer binds himself to put on improvements of not less than a fixed value. No saloons are permitted, and the class of summer visitors is of the very best.

A few miles east of Del Mar is POWAY, the center of a rich agricultural and horticultural valley. It has stores, schools, churches, and post-offices.

Six miles north of Del Mar is ENCINITAS, another sea-side village with flattering prospects. East of this village are the Encinitas and San Dieguito ranches, both large bodies of rich productive land that are being rapidly put under cultivation.

Ten miles east of Encinitas is BERNARDO, another agricultural center. A village with the usual stores, school-house, and shops.

The next railroad station north of Encinitas is STEWARTS, six miles and a half away. This station is important as the point where visitors take stage for Escondido, ten or twelve miles to the east.

ESCONDIDO is a beautiful town in the center of one of the richest regions in San Diego County. It is starting with a highly-educated class of citizens. In fact, the object is to make this delightful place an educational center. Already the University of Southern California has established a preparatory school here, called the Escondido Seminary.

The seminary building cost thirty thousand dollars, and, like the numerous other branches of this university, is under the control of the Methodist Episcopal Church. The school has an endowment of one hundred thousand dollars. A railroad will shortly connect Escondido with the outside world.

Two miles north of Stewarts is Carlsbad, a sea-side resort noted for its mineral waters.

Three miles north of Carlsbad is OCEANSIDE, the chief town in San Diego County, not on the bay. Here within a few months has sprung up a town of two or three thousand inhabitants. It has its newspapers, numerous stores, hotels, bath-houses, and, in fact, everything a well-regulated watering-place should have. Two more railroads will doubtless be here inside of six months, and the prospects of this town are altogether very bright. The surf-bathing at this point is good.

Here the California Southern Railroad deflects to the east, and the north-bound tourist can no longer sit by the car-window and feast his eyes on the limitless expanse of the deep blue sea. But no visitor to Southern California should fail to stop at Oceanside; not for the surf-bathing and invigorating ocean-breeze alone—those he can get at Santa Monica, Long Beach, San Juan-by-the-Sea, Del Mar, and numerous other places—but near Oceanside is the wonderful San Luis Rey Mission. This mission is located at the town of SAN LUIS REY, four miles east of Oceanside. It was established in June, 1798. The population of the town is about six hundred. There are the usual stores, school-house, etc. The town is at the mouth of the San Luis Rey Valley.

North of Oceanside the railroad crosses the Santa Margarita Ranch, a principality in itself of one hundred and thirty-three thousand acres. Meadows, brooks, lowing kine, fat hogs, and playful lambs delight the eye.

The Call to Sunrise Mass, Pala Mission.

Nineteen miles north of Oceanside is FALLBROOK, a mountain station, near which is good agricultural and fruit land. The road runs through the picturesque Temecula Cañon to the station of Temecula, one hundred and twelve miles from Los Angeles and seventy-four miles from San Diego. Here is an historic section. The reader, who has read "Ramona," already knows of Temecula and the beautiful Pala Valley twelve miles inland, where the old Pala Mission stands.

The tourist will be well repaid if he gets off the cars at Temecula, and goes by team twelve miles inland to the Pala Mission. There is a comfortable hotel, and abundance of good food. Mrs. Jackson spent three months at the various Indian villages in this vicinity. A pilgrimage to these shrines, where this gifted author worshiped, will be long remembered.

Five miles farther on is the pretty town of MURIETTA. There is an excellent hotel at Murietta, and the visitor to these Indian villages would do well to make his headquarters here. Charges for board and livery are reasonable, and the details in regard to the location of the Indian villages can be learned from the landlord.

Three miles east of Murietta are the Temecula hot springs, a detailed description of which is given in the chapter on mineral waters of San Diego County.

Four miles north of Murietta is romantic WILDOMAR, with its neat homes, green lawns, and brilliant flowers.

The next place, and one of much note, is ELSINORE, situated on the lake of that name, at an altitude of twelve hundred feet. This place is just midway between Los Angeles and San Diego, and the quail and wild water-fowl make it a choice place for sportsmen to congregate. There are numerous small boats and a small steamer on the lake. A variety of clay is found here especially adapted to the manufacture of the pottery for which Elsinore has become

noted. Here is also one of the best coal-mines in Southern California. There are numerous hot and cold mineral springs in this vicinity. There are several rich gold- and silver-mines near Elsinore. Mineral paint and asbestus are also found here in considerable bodies. Take it all in all, there is probably no place in San Diego County that has more flattering prospects of future development than Elsinore.

Ten miles northeast of Elsinore is the San Jacinto Valley, fifteen miles wide and thirty miles long. This valley is attracting many settlers. Everything in the way of deciduous fruits and grain is profitably produced here. The average elevation is about fourteen hundred feet. There are mountain streams for irrigation, and also more than forty artesian wells that furnish abundance of water. On the mountains east of the valley are large forests of pine, hemlock, and tamarack, from which lumber in quantities is manufactured.

San Jacinto is the chief town of this valley. It has a population of nearly two thousand. There are brick blocks, brick school-houses, brick churches, and many other indications of a substantial growth. The place is probably the nearest self-supporting of any in the county. It has its own lime-kilns, manufactures its own lumber and brick, and produces almost everything that man's physical needs demand, even to sugar, for which honey furnishes an agreeable substitute. The stage from Perris, eighteen miles away, on the California Southern Railroad, brings a daily mail. A contract has been entered into for the building of a railroad *via* Perris, to connect with the California Southern Railroad.

Pinacate and Rock House are both flourishing villages in the western part of the San Jacinto Valley, with the usual village accessories.

Thus is closed a hasty sketch of this large county. The

writer has several times traveled over the county, and has tried to condense and present its most salient points. Liberal use has been made of the valuable works on San Diego County, by Douglass Gunn and T. S. Vandyke, Esq. The San Diego "Sun" and the San Diego "Union" have also been frequently quoted. The writer is also indebted to Bryant Howard, Esq., president of the Consolidated Bank of San Diego, for valuable assistance.

Climate of San Diego County.

The following, from the "Southern California Practitioner" for May, 1887, is from the pen of C. M. Fenn, A. M., M. D., a gentleman who has been for many years a practitioner in the city of San Diego:

"In the course of a statistical contribution to the last United States Census, I wrote of California as the very mother of desirable climates. Nor, after a residence of more than twenty years in different portions of the State, am I in the least disposed to retract the statement. And whatever may be said of this broad area of 769 by 332 miles is a hundred-fold more applicable to our phenomenal county, with an expanse of seventeen thousand square miles! The latter is a principality in itself, and contains a great diversity of excellent climates.

"It is, however, very difficult, as Bacon suggests, to convey an adequate idea of atmospheric conditions by either signs or words, and especially to those living on the Atlantic side of our continent. For neither parallels of latitude, nor isothermal lines, nor yet the otherwise accurate data of the Signal Service, enable one to institute a fair comparison. For example, the cities of New York and Charleston may approximate in latitude the northern and southern boundaries of California, while a locality isothermal with San Diego might be far removed from the latter city, and be surrounded with miasmatic swamps, which are unknown here; nor does a mean low temperature necessarily imply entire freedom from very mean atmospheric and other conditions. Madera, it is said, wears a mean annual temperature of 64·9°, the seasons never ranging below 60°,

nor exceeding 70°; yet the parching lestes, or easterly winds, laden with impalpable and irritating dust, and a debilitating summer atmosphere, render it well-nigh uninhabitable for a portion of the year. Malaga, for similar reasons, is a paradise at one season, but an inferno at another.

"The fatal objection to such so-called health-resorts is—and many places in our own country are no better—that they are wanting in the important feature or element of continuity, and the tourist or invalid has barely unpacked his wardrobe when the approach of the pestilential season warns him to flee to some other city for refuge or return home. Such repeated and sudden transitions of air, food, water, and associations must be a severe ordeal to the robust, and how much more trying to one of feeble vitality!

"In striking contrast to such places, and at the same time illustrating one of the leading traits of our classical climates, stands the fact of their all-the-year-roundness.

"Furthermore, it is a common experience that, directly after the traveler by steamer gets below the thirty-fourth parallel, he becomes conscious of breathing a different atmosphere. If he has been sea-sick and bedridden, he now ventures upon his 'sea-legs,' his appetite returns, and he eats and breathes to some purpose; the aroma of the semi-tropic vegetation now comes to him over the really Pacific Ocean, and he appreciates, for the first time, the significance of the adjective. The farther southward his journey the more congenial his environment, until within the land-locked Bay of San Diego he attains the realization of his dreams.

"If his approach has been by railroad, and the time our early spring, his senses will be regaled with a scenery at once diversified and beautiful. From Colton southward there is a long succession of rocks and rills, meadows and cañons, flowers and trees, interspersed with thriving settlements, until the Pacific comes into view at Oceanside. As its name implies, this embryo city overlooks the ocean from a somewhat precipitous bluff, nearly fifty feet above mean tide. The air is necessarily invigorating and healthful, coming as it does directly from the sea; with Del Mar, some miles farther south, and between the two the town of Carlsbad, where they have discovered mineral water, which by recent analysis equals, if not surpasses, the celebrated springs of Germany and the Kissengen waters of Bohemia; this growing town forms a triumvirate of cli-

matic conditions which characterize one type of our San Diego County climates.

"I might describe also the El Cajon, Escondido, and many other valleys, varying in altitude above mean tide from 400 to 6,500 feet, in which hot and cold springs, pure and mineral waters, together with a genial atmosphere, suggest an almost fairy-land.

"But the purpose of this paper is to put upon record the climates more immediately connected with this bay. Selecting two that are most distinctive, I shall first speak of Tia Juana, a large body of land situated at the foot of the bay. The portion which I consider especially salubrious consists of about a township and a half of the red upland, or *mesa*, so characteristic of this part of the State; a stratum of marl, or conglomerate, impervious alike to water and tool of iron, underlies the whole of it. The soil proper, of varying thickness, is in wet seasons susceptible of a high state of cultivation at such times, maturing any of the cereals. Its usual condition, however, is dry, and with cultivation, porous, ordinary rains being so rapidly absorbed or evaporated that within a few hours thereafter one can safely sleep on the ground. From sea-level the rise of the land is gradual and undulating, until at a distance of two miles it reaches an elevation of perhaps one hundred feet, then a depression occurs included within a mile, when the ascent is rapid to the height of five hundred feet.

"The air of this entire belt, partly because of the ocean-breezes which constantly fan the heated soil, is wonderfully soothing to lesions of the lungs, and mucous membranes generally. Fogs are seldom known here, and rains are not at all frequent, though both may at times be seen following up the estuaries on either side of this plateau.

"During seven months' sojourn here the writer completely overcame rheumatic proclivities, which had driven him away from San Francisco, and parted company with a catarrhal trouble which had annoyed him for many years. Another medical gentleman, a victim to one of the severest forms of ozœna, was measurably relieved during a short stay. Besides these cases, an aphonic consumptive entirely recovered her voice and a fair degree of health in less than four months after her arrival. Within my observation, also, were several phthisical incurables, whose lives were unquestionably prolonged by residence here.

"In addition to its hygienic advantages, this locality furnishes a rare opportunity for all kinds of sea-bathing, fishing, pleasant walks and drives, on land and beach, and a varied landscape of plain and ocean, mountain and valley, upon which the eye can not dwell without increasing interest. As an adjunct to pneumatic differentiation, inhalations, or medication of the lungs, by any method whatever, I can cordially recommend the Tia Juana. For suburban residences, also, it can have no formidable rival in that vicinity.

"Another typical and remarkable salubrious climate is found in the city of San Diego, which, from its position on the eastern shore of our bay, is neither coast nor inland; it includes, however, the desirable qualities of each. Point Loma, one of the most elevated light-house promontories of the world, shuts out the sea from a small portion of the city. From sea-level the red granite earth trends eastward with gradual ascent, until it culminates in a plateau one hundred feet in altitude, and extending in all directions. It will be readily inferred that the natural drainage of San Diego can not be excelled. Yet her citizens have recently, and unanimously, voted to appropriate several hundred thousand dollars for sewerage purposes, which will doubtless be carried out under the immediate supervision of that eminent sanitary engineer, Colonel Waring. The water-supply, derived from wells of soft water, and chiefly from the San Diego River, is more than enough for the present population of fourteen thousand. Besides these, the near future promises us an abundance of pure mountain water, through the medium of two extensive flumes already in process of construction. The rainfall of the city is less than in the interior, an average rainy season with us implying about ten inches of water, evenly distributed through the winter and spring months. As in the ancient days and times, when the great temple was building, so here it usually 'rains in the night season only,' and the days pass with genial sun and unclouded skies, as if to give the invalid no reasonable excuse for remaining within doors. For the same reason mud is seldom seen, and then for a brief period, even upon our thoroughfares. For the most part, therefore, there is an absence of the noxious fumes so frequently emanating from filthy streets, and which are often not less deleterious than sewer-gas itself. In corroboration of our equable temperature, the Signal-Service records for thirteen years, ending with 1884, show a mean difference between summer and winter of only 12·3°!

I have also been favored by the department at Washington with the meteorological data of January and July, 1886. Without quoting *in extenso*, I find the mean daily range of temperature at San Diego to have been 13° and 11°; mean daily relative humidity, 74° and 77°; highest velocity of prevailing northwest wind, 29 and 19; number of days on which the sun was more or less obscured, by what we might call high fog (?) or vapor, 10 and 2 (I believe the records class those as cloudy days, and write foggy days 0).

"By way of contrast, and at the same time demonstrating the superiority of coast climates, I append data collected for same period at an inland locality of some celebrity: Mean daily range of temperature, 16·6° and 29·1°; mean daily relative humidity, 77·8° and 72·8°; highest velocity of the prevailing west and north winds, 37 and 22; cloudy (high fog?) days, 12 and 2; greatest daily range of temperature, 28·2° and 40·4°, and of San Diego 19° and 24°!

"Referring to the San Diego data, we discover less humidity than in the interior, and a much less range of temperature. The effect of such atmospheric conditions upon the system will be readily appreciated. The changes between night and day, as well as of the seasons, are so insignificant relatively that the least vitality is not too severely taxed. The day heat, as we have seen, can never be oppressive, and cool nights ever conduce to refreshing slumber. It is the commonly received opinion, I know, that an Eastern winter is the chief source of danger to one of weak habit. But I imagine that it is only so when a hot, debilitating summer has already handicapped him in his coming contest with cold weather. If comfortably housed, one can guard against the cold, but the heat of those prostrating summers can only be escaped by flight. In these respects our delightful summer weather offers especial inducements, and should be cultivated more generally than it has been in the past.

"Without attempting to enumerate and explain all of the factors which give to these climates their peculiar character, I may speak of the constant trade-winds, which bring us iodine, ozone, and other healthful elements, and at the same time, like scavengers, carry off endemic impurities, where they exist; our position on this western slope of the continent, our latitude, and especially our longitude, which places us twenty minutes farther east than San Francisco, thus shielding us from the cold ocean-currents which come down

from the polar regions; and more than all, a soil *sui generis*. In addition to this, we are largely indebted to the desert, sixty miles to the east of us, and which has been somewhat of a bugbear in the minds of those who did not understand its situation. Besides being the frame or setting to the landscape in front and to the westward, this great inland sea keeps our currents of air in motion. It projects its high and hot air-waves skyward, leaving vacua to be filled with colder air, and at the same time modifies the more humid strata, which rush landward, so that even the laws of decomposition are held in abeyance. In many inland localities meat suspended in the open air becomes thoroughly desiccated, and the carcasses of animals, if left upon the plain, simply dry up.

"In conclusion, I would suggest that there are many other elements of equal or greater importance in forming an estimate of climate, and which I fear me are frequently suppressed. I refer to the presence or absence of ordinary and local diseases. Manifestly, the consumptive should studiously avoid places known to be the habitat of pleurisy and pneumonia, though phthisis may never have been heard of therein. So, also, the victim to hepatic lesions should keep away from malarial districts. In short, a place may be known by the diseases it harbors, much as an individual by the company he keeps. In illustration of this maxim, I quote briefly from my paper on the 'Ordinary Diseases in San Diego,' published in an Eastern medical journal some months ago:

"'I have never witnessed an epidemic of typhoid fever in San Diego, nor have I ever seen a typical case of the malady that was not imported.

"'I have never known pleurisy and pneumonia to be extensively epidemic here.

"'Indigenous intermittent fever is practically unheard of in San Diego.

"'Cholera infantum occurs only sporadically, if at all.'

"The remarkable infrequency of these staple diseases, during more than fifteen years, is an immense percentage in favor of this climate. To the medical man such facts speak more forcibly than meteorological data, however obtained.

"I may further add, that for more than ten years I have represented several insurance companies as medical examiner, and during this entire period not one of the insured has died from natural

causes! While one Eastern company, with more than sixty local risks, has been collecting from twenty to thirty-three assessments annually, it has paid no losses here. The same is true of the A. O. U. W., with the same number of assured, except that its assessments have amounted to about twenty each year.

"Among our most active business citizens are many who came here years ago, hoping for only a brief respite from their maladies. They still live.

"Unexceptionable as are these California climates, they should be sought early in the disease, or better, early in life. For when such a malady as phthisis is fully developed, and the plague-spot is out, the victim, like the leprous voyager to Molokai, may seldom hope to return."

Mineral Springs of San Diego County.

San Diego County is very rich in valuable waters, but very poor in authoritative reports. The following has been received from the authorities mentioned.

In response to a request from the writer for information on this subject, Dr. J. F. Escher, a prominent physician of San Diego, says:

"THE BOOKMAN SODA SPRINGS are forty-five miles directly east of the city of San Diego, and can be reached by stage and private conveyance; the former every two days as far as Descanso P. O., and the remainder of the distance—twelve miles—by private conveyance. The water is cold, and is strongly impregnated with soda, iron, and carbonic-acid gas. The water resembles that of the Napa Soda Springs.

"THE TIA JUANA HOT SPRINGS—temperature from 120° to 140°—though not in San Diego County, being directly across the line in Lower California, are tributary to San Diego city, and nearer to the latter than any of the herein-named springs. The water is impregnated with *sulphur*, *arsenic*, and other constituents, and has proved very efficacious in the treatment of rheumatism, renal affections, and anæmia. The distance is sixteen miles south of San Diego, and can be reached by stage every day. In a short time a steam-motor line will be completed to them, so that they can be

reached any hour of the day in a few moments. At present the accommodations are very inadequate, as a year since the buildings were washed away in an unusual freshet.

"THE AGUA CALIENTE, on Warner's Ranch, in the Valle de San José, seventy miles northeast of San Diego city, and twelve miles north from the Julian mine, can be reached from the latter place by private conveyance, between which place and this city there is a daily stage. The accommodations are ample, though somewhat rude, the springs being in the possession of the Indians. Temperature of water, 140°, strongly impregnated with sulphur and iron.

"Dr. Winder, of this city, who has visited most of the famous mineral springs of the United States, thinks these springs are not surpassed, if equaled, by any in the land.

"AGUA TIBIA SPRING, also in the vicinity of Julian, is sixty miles from here. Of this spring I can learn literally nothing.

"There is also a mineral spring in the Santa Margarita Ranch, near the C. S. R. R., which has quite a reputation in the cure of rheumatism.

"Carlsbad, north of San Diego, has already been referred to. The waters for which the place is noted are from an artesian well six hundred feet deep. A correspondent of the Los Angeles 'Daily Times' sends the following report:

"'I send you the analysis of the Carlsbad water, signed by the State chemist:

	Per gallon.
Free carbolic acid	4·99
Sulphate potassium	13·79
Sodium	19·54
Chloride sodium	81·48
Sulphate magnesium	·42
Lime	10·33
Carbonate	1·19
Magnesium	1·24
Peroxide iron	·23
Silica	1·64
Chemically combined	2·37
Water and organic matter	2·37
Total	132·23

"'A spectroscopic examination of the water gave no reaction —lithium, strontium, or barium.

"'The water contains no ammonia or nitric acid.

"'(Signed) GEORGE E. COPLEY,

"'*Assistant State Chemist.*

"'A light, purgative saline water, with enough of the chalybeate character to impart tonic qualities, and are rendered palatable. A slight impregnation of carbonic-acid gas.

"'(Signed) E. W. HILGARD,

"'*State Chemist, University of California.*'

"Together with this analysis they send an analysis of the celebrated Carlsbad Springs of Germany, and the Kissingen Springs of Bohemia. Every ingredient that is in the one is in the other, with the advantage of the Carlsbad of California in its being about twenty-five per cent stronger. There is not a day that passes but a shipment of the water is made to some place, and but a few days ago nearly a car-load was shipped to Boston, Mass. More anon."

The TEMECULA HOT SPRINGS are the most noted in San Diego County. The following, from the "Southern California Practitioner" for June, 1887, is by Dr. Henry Worthington, of Los Angeles:

"Some twelve years ago, while I was seeking health in the Temecula country, I met one day an old-fashioned Mexican *carita* drawn by two mules, driven by an Indian boy, and in the bottom of this strange vehicle lay an old man quite unable to move. Out of curiosity I examined this man. He was suffering from chronic rheumatic arthritis of several years standing, and he had traveled from Lower California (about 300 miles) to visit the celebrated Temecula Hot Springs. Having become interested in his case, I watched the effects of the waters on him. This was in July, 1874. Three months afterward I was much surprised one day to see this same old fellow drive the *carita* himself, and I then learned that his rheumatic joints had been quite restored to their normal functions by a three months' course of bathing. Since that time I have known many cases of rheumatic diseases either cured or much relieved by drinking and bathing in these waters.

"These hot springs are situated in the northern part of San Diego County, about three miles from Murietta colony, in the foot-hills, having an altitude of some 1,200 feet above the sea-level. The waters emerge from the side of low lime-hills, and, filtering through the earth, form a sort of limited *cienega* or marsh, and collecting at a lower point flow as a small stream until they are lost in the sands of a dry creek.

"The medicinal properties are due to sulphur, iron, and soda salts, as follows:

Bisulphate of potash,	Bicarbonate of iron,
Bicarbonate of soda,	Bicarbonate of manganese,
Bicarbonate of potash,	Chloride of sodium,
Bicarbonate of lime,	Free carbonic acid.
Bicarbonate of magnesium,	

"The temperature is about 144° F., hot enough to boil an egg in from five to six minutes. These springs are well known—I may say celebrated—throughout this region, and even into Baja California and Sonora, so that for years they have been the resort of the natives and others. As in the instance of the old man referred to, many have made pilgrimages from great distances.

"The climate of this region is, perhaps, somewhat different from that of any other part of Southern California—in fact, the winters are colder and the summers hotter—the changes more decided; and I am fair to say that, in many cases, this may be a desideratum quite as desirable as the most ideal equability. In the summer season, that is from June to November, one may get extreme dry heat; in the winter extreme dry cold, not the harsh chilliness of the East, but the tempered, bracing cold of a sub-tropical region. So much is said about equable months in these days, that I think this hot spring region is rather unique, in its having a climate hot in summer, withal so dry and bracing, and in winter an exhilarating dry cold, without extreme altitude.

"There are certain pulmonary diseases that require these very climatic elements, and I have seen many cases of lung-troubles at once improve upon a removal to this district, after having exhausted, apparently, the climatic benefits of other more popular regions.

"In 1876 I examined H. L. B., a young man of 25—cavity in right apex, extensive adhesions posteriorly—who had tried several

other climates, but who was evidently becoming worse monthly. I advised the hot springs country. In November, 1886, the apex had cicatrized, and the fibroid condition at the posterior base I do not consider serious.

"In 1877 I sent a patient to this same region, who was evidently in the third stage of phthisis. After a residence of some four years in this neighborhood, this patient did so well that he returned home to New York, and is still living.

"A case of asthma that had resisted every treatment, making life well-nigh intolerable, has perfect relief when at Temecula.

"A gentleman, who was an intense sufferer from chronic bronchitis and cardiac dilatation, went to the hot springs some fifteen months ago, and got such surcease from his bronchial catarrh that he now has little discomfort from cough or dyspnœa.

"A great many cases of rheumatism I know of, that have been quite cured by these waters; two intractable cases of urticaria; a severe case of psoriasis rubra, that had resisted arsenic and strychnine; one rather bad case of so-called muscular rheumatism; several cases of cystitis, one my own patient, whom I could not cure by ordinary treatment; a case of chronic cellulitis of left broad ligament, with successive agonizing attacks of suppuration, was relieved by the hot baths, hot vaginal injections, and drinking large quantities of the water, more than by any other treatment; and so on, I could adduce many other cases from my own and others.

"The above, of course, is the best side of the picture, but these are enough successful cases to test fairly the remedial value of these waters.

"Thus, here we have a climate dry, bracing, temperate, with a decided change through the seasons, suitable for cases of pulmonary, bronchial, and rheumatic affections—cases, probably, that do not do well under more equable and less exhilarating climatic conditions; altitude moderate, soil perfect, strong dry winds, good water, long, rolling valley, surrounded by high hills or mountains, accessible to the pine regions, and in addition medicinal springs, valuable in many chronic diseases—known to have effected positive cures in some cases. Are these not desiderata worth recording? I am far from ascribing to the hot springs region all the advantages claimed by other more vaunted and popular places; but, among the bountiful gifts Nature has given to Southern California, not the least, I believe, is the Temecula Hot Springs district.

"The subjoined table was kindly given me by Dr. A. M. Lawrence, who lives within three miles of the hot springs at Murietta:

Elevation, 1,090 feet; latitude, 33° 32′ 24″; longitude, 117° 10′ W.

DATE.	Mean temperature.	Highest temperature.	Lowest temperature.	Mean humidity.	Prevailing wind.	Total rain fall.	No. of days on which rain fell.
1885.							
July	70·94	105	57	57·38	S. W.	0	0
August	75·95	111	58	57·21	S. W.	0·7	1
September	67·48	107	45	61·10	S. W.	0	0
October	61·15	100	35	63·46	S. W.	0	0
November	54·52	80	27	71·04	S. W.	5·15	8
December	49·47	80	27	70·59	S. W.	0·74	5
1886.							
January	49·49	77	21	78·20	S. W.	10·66	8
February	51·00	80	31	72·34	S. W.	0·48	2
March	49·87	80·6	30	84·54	S. W.	5·94	8
April	54·12	78	34	79·21	S. W.	3·79	4
May	6·20	98	44	77·11	S. W.	0	0
June	64·95	98	48	76·79	S. W.	0	0

SAN BERNARDINO COUNTY.

This is the largest county in the United States. It contains 23,472 square miles, making over 15,000,000 acres. In other words, this one county in Southern California is about the size of the States of Connecticut, Delaware, Maryland, and Massachusetts combined. If we add Los Angeles and San Diego Counties to San Bernardino, we have a territory as large as the four States just mentioned and Vermont and New Hampshire combined.

The county lies between the parallels of 34° north and 32° south. The editor of the San Bernardino "Courier," in a recent issue, says:

"The climate and productions are, of course, sub-tropical, though so varied are the soil and climate that, within the bounds of the great San Bernardino Valley almost every staple indigenous to both the sub-tropical and temperate zones is produced. Our chief produc-

tions are the citrus fruits so precious in commerce: raisin-grapes, the various berries, wine-grapes, from which great quantities of the best wine made in the State are manufactured, alfalfa-clover, the most productive plant of forage, wheat, barley, oats, buckwheat, and corn, potatoes, which yield prodigious quantities to the acre, and general farm and dairy produce.

"Oranges, lemons, pomegranates, limes, figs, quinces—in short, all the sub-tropical fruits here attain to perfection. Our citrus fruits are the best known in commerce, and beat the world in competition at New Orleans and Chicago. Orange-culture is the most profitable use to which land can be put in these latitudes; hence, orange-growing is here a leading industry. It is as facinating as it is a profitable pursuit; hence every newcomer wants an orange-grove. After the eighth year an acre in oranges may be safely relied upon to give a net profit of five hundred dollars. Other citrus fruits are generally, if not quite, as profitable, though the orange is, on the whole, more certain. The crop ripens in December. An orange-grove in bloom in the middle of January—the trees densely, darkly green, with their golden fruit standing out in contrasted relief, while the bridal blossoms, so dear to poetry, peep out in radiant purity—is one of the most beautiful and fascinating sights in Nature. What the climate is can be realized from a knowledge of the facts above given.

"Our raisins have a national reputation for superiority, and command the highest prices in the California and Eastern markets.

"The productions of the temperate zone are yielded in prodigal profusion. Our *mesas* give fine crops of wheat of superb quality. Barley and other small grains yield largely, while we have some of the richest corn-land in the world.

"Potatoes, beets, cabbages, turnips, beans, sweet-potatoes, and garden-stuff thrive most luxuriantly. In many sections of the valley Irish potatoes can be had fresh from the ground every month in the year. Garden-stuff is perennial. So are strawberries. So is alfalfa-clover, which yields from ten to fourteen tons of splendid hay annually to the acre. In midwinter we have string-beans, fresh tomatoes, 'new' Irish potatoes, green peas, green garden-stuff, and the finest citrus fruits in the world on our tables daily. Strawberries fresh from the vine were peddled in San Bernardino all winter. Grapes from the vine were to be had in the middle of January in the sec-

tions around the foot-hills. Farming, in the Eastern sense, is followed by few. The farmer here, as a rule, is, more properly speaking, a horticulturist. He grows potatoes, wheat, barley, corn, beets, alfalfa—two, three, or perhaps all of them—for the use of his table and his stock, but generally depends upon the sale of his fruit for his annual income. Of course, he grows his own apples, peaches, pears, and grapes. Good apples, delicious peaches, and perfect pears are produced in the San Bernardino Valley; and all of these command a profitable market. There are a few great grain-ranches in the valley. Where water for irrigation is available, land which will here give good wheat is altogether too valuable for the cultivation of the citrus fruit to be 'wasted in wheat-growing,' as the farmers say."

A large portion of the county is mountainous and desert, but the mountains are rich in minerals, and the deserts lack only water to be fertile. As the other lands become occupied, the writer fully believes means will be at hand for irrigating these barren wastes. The soil is excellent, and in the near future water from artesian wells, tunnels, or mountain reservoirs will doubtless be developed.

City of San Bernardino.

This is one of the chief cities in Southern California. It was originally a Joe Smith Mormon town, and was planned after Salt Lake City. The town is well laid out, and that is about all that the San Bernardino people need to thank the Mormons for. So long as the Mormons were in control, the city developed slowly. The Mormon yoke was long since thrown off, and Catholic and Protestant bells ring out a new era of progress and prosperity.

The altitude of San Bernardino is 1,073 feet. It is in a fertile basin, and the visitor is at once captivated by its numerous beautiful homes and rich orchards. The neat and happy home makes any place attractive. Avenues of palms, excellent public highways, grand public buildings

are pleasant to look upon, but are no indication of the real status of the people or the condition of the country.

San Bernardino and its vicinity is composed of successive avenues of homes. A fruit-growing community must necessarily mean a community of many homes. "Ten acres enough" can well be said here. The outside of a home usually indicates the character of the people inside. Orange-culture naturally develops the finer qualities of humanity to a higher plane than that of corn- and hog-raising.

Visitors will find fruit-growers, as a rule, people who love the good and the beautiful. They are educated, and believe in the education of their children. It seems as though it would be an impossibility for a family to grow up here, under the shadow of Mount San Bernardino, where an ordinary drive leads to mountain cañons and waterfalls, surrounded by flowers and ferns, where their chief occupation is among shapely trees and fragrant blossoms, cultivating and gathering and packing the rosy-cheeked apricot, the delicate-skinned nectarine, and the golden orange, without having developed within them the finer sensibilities and higher attributes of mankind.

Abundance of fruit means abundance of water. San Bernardino has in its immediate vicinity over four hundred artesian wells. These never-failing fountains, bursting forth from their earthly bounds, present a novel picture.

The population of San Bernardino is about nine thousand. There are excellent public and private schools, and the usual complement of churches and secret societies.

There are several hotels; the Steward, just completed, is one of the most commodious on the coast. The city is on the California Southern and California Central Railways, and a motor-line makes trips every few minutes to the Southern Pacific Railroad, three miles away.

Other lines of railroad are soon to be constructed, so

that San Bernardino will be an important railroad center. Trains leave hourly for Los Angeles, three times daily for San Diego, and twice a day for Kansas City, Chicago, and New York.

There are numerous substantial brick business blocks. The climate of the city of San Bernardino is very pleasant in winter, but its summers are rather warm. Not so but people can live, do business, and enjoy life, but the fact that the ocean at Santa Monica or Oceanside is only about seventy miles induces many to spend a few weeks where they can be fanned by the ocean's breath.

San Bernardino will ultimately be a large city. The writer of these lines has had ample opportunity to study the situation and channels of trade in Southern California, and he has no hesitancy in predicting that San Bernardino is destined to be a solid commercial city. To the east is the San Gorgonio Pass, with San Bernardino Peak twelve thousand feet high on one side, and San Jacinto Peak nine thousand feet high on the other side, through which the Southern Pacific Railroad enters California, while a few miles to the north is El Cajon Pass, through which the Atchison, Topeka, and Santa Fé reaches the Pacific coast.

As to the climate of San Bernardino, Dr. B. D. Collins, a graduate of the University of the City of New York, is a living witness. The doctor was sent here four years ago with incipient phthisis. He is now one of the healthiest-looking practitioners in that city.

The reader will probably note throughout this book the great proportion of physicians mentioned who have come to Southern California pronounced consumptives or asthmatics. Their testimony is freely quoted, because they are the most careful and competent observers.

The other towns in San Bernardino County are Barstow, Calico, Dagget, Ontario, Redlands, Lagonia, Banning, Colton, and Riverside.

BARSTOW is a mining and railroad town eighty miles north of the city of San Bernardino. It is in what is known as the desert, It looks bleak and desolate, but there is an excellent hotel, and two or three days can be pleasantly spent here visiting the mines, collecting minerals and other curious rocks. The atmosphere is very dry, and cases of phthisis where there is no tendency to bleeding of the lungs would probably derive benefit from a brief visit here. Any lengthened visit would result in *ennui*. Barstow is a capital place to get a good idea of life on the desert.

Nine miles east of Barstow is DAGGET, another mining-village, where there are immense beds of salt; while seven miles north of Dagget is—

CALICO, the mining-center of Southern California. The silver-mines of this section are a perpetual source of wealth, and employ a large number of men. It is estimated that the output from these mines is two million of dollars in bullion annually. The tourist who wishes to visit these mines can do so without undergoing any hardships. The nearest station to Calico is Dagget.

Now, the reader will in his mind leave the arid desert, come on the Santa Fé road through a rich tract of country—Hesperia—through El Cajon Pass back to San Bernardino, then west ten miles on the California Central Railroad to—

ETIWANDA.—This is a collection of homes and orchards. A charming place! Although Etiwanda is not ambitious to become a great town, yet they have centrally located one of the best public-school houses in San Bernardino County. Nines miles farther west on the California Central is—

NORTH ONTARIO, or Magnolia, as the station is called. South of this point, three miles on the Southern Pacific Railroad, is—

ONTARIO, probably the most artistically developed place in Southern California. From this station to the base of the mountains, seven miles away, extends an avenue two

hundred feet wide, lined on each side with pepper-trees, eucalyptus, magnolia, orange, and palm trees.

Setting back a short distance from the avenue are elegant villas surrounded by lawns, orchards, and flower-gardens. The beauty of this scene can be best comprehended when it is known that the altitude at the station is fourteen hundred feet, while at the end of the avenue, at the base of the mountain, the altitude is twenty-one hundred feet. Thus it is to the tourist on the Southern Pacific train like a picture hung on a wall. Just think of an avenue seven miles long, with trees, gardens, lawns, and elegant houses for a picture, and a mountain for the wall upon which the picture is hung!

At the Southern Pacific station, Ontario proper, there is an excellent hotel, stores, newspaper, and several church organizations. There are no saloons at Ontario. The people are liberally educated and refined. Besides the excellent public schools, there is a large, substantial structure—the Chaffee School of Agriculture of the University of Southern California. This institution, like the branches of the university at Escondido and San Fernando, is under the general supervision of the Southern California Conference of the Methodist Episcopal Church. Five hundred and twenty-four tons of raisins were shipped from Ontario in 1886.

There were erected in Ontario during 1886 sixty-one buildings, at a cost of over $70,000. The growth has been at a much more rapid rate the present year owing to the advent of the California Central, which crosses the avenue halfway between the Southern Pacific Railroad and the mountains. Ontario is a choice resort for invalids. From Ontario to Colton, on the Southern Pacific, is nineteen miles east.

COLTON is situated at the crossing of the South Pacific and the California Southern Railroads. It is fifty-

eight miles east of Los Angeles and three miles south of San Bernardino. From thirty to fifty trains pass through Colton daily. Almost all kinds of fruit are profitably raised here, the orchard of Dr. W. R. Fox, the leading physician of the county, being particularly noted.

The Colton Packing Company has a mammoth cannery here, and employs two hundred persons. The capacity is 1,500 three-pound cans of fruit per day. Brick-kilns, lime-kilns, lumber-yards, and stone-yards do an extensive business. There are in Colton good hotels, schools, churches, and the usual number of fraternities.

As to the climate of Colton, the following interesting information from the pen of Dr. G. L. Hutchinson, a practitioner in Colton, who came to Southern California several years ago (through the advice of Dr. B. F. Westbrook, the throat and lung specialist of Brooklyn, New York) on account of rapidly-developing disease of the lungs, is valuable :*

"While Los Angeles is usually the objective point for tourists from the East, those coming by the two southern routes pass a point that experience is demonstrating possesses peculiar advantages for the health-seeker.

"Colton is a town of about 1,500 inhabitants, located sixty miles from the coast, near the center of the beautiful San Bernardino Valley, and at the junction of two of the great transcontinental railroads, the Atlantic and Pacific and the Southern Pacific. About twenty miles distant can be seen the snow-capped peaks of the highest mountains in Southern California, while down in the valley are some of the finest orange-groves in the State.

"A large portion of the town is built upon a broad, sandy slope or 'wash,' which seems to be the bed of a mountain-stream that was long ago diverted to other channels. It is about one half mile from and seventy feet above the Santa Ana River. If a dry, porous soil is desirable, here it is. The well-digger goes down seventy feet for

* "Southern California Practitioner," p. 42, February, 1887.

water, fifty feet of which is through dry sand and gravel. With slight modifications, the relation between elevation above sea-level and temperature holds good in Southern California as elsewhere. Colton has an elevation of about 1,000 feet; slight frosts sometimes occur, but not enough to injure orange or lemon trees. Fog is rare; when it occurs it is only at night, and is so thin that it disappears with the first rays of the morning sun. Protected by some low mountains to the southwest, the heavy sea-fog drifts by to the north and south, and rolls up in fleecy masses against the mountains several miles away.

"Lying out in the valley several miles from the mountains, the cold winds which rush out of the cañons and through the passes subside in the warm air of the valley, like turbid streams flowing into a placid lake, and one often hears the remark made by visitors who are spending the winter nearer the mountains, 'How still it is here in Colton.' This does not apply to the northers, for the highest mountains and the deepest valleys can only afford partial protection from them.

"A large proportion of the rain falls upon the mountains; many days in succession the mountains will be shrouded with dark storm-clouds, while out in the valley is unbroken sunshine. There is during a part of the year a sudden fall of temperature at sunset, ranging from fifteen to thirty degrees. Theoretically, this has been considered unfavorable for phthisical patients; but with the important elements of elevation, dry air and soil, it is practically the reverse.

"Pure water is at all times of the greatest importance, and especially in a warm climate. Heretofore water has been supplied by deep wells, but now water is brought in iron pipes, from artesian wells several miles away.

"Six miles south of Colton is Riverside, and three miles north San Bernardino; with these cities we are closely connected by steam and horse cars, and while we have many of the advantages, we escape the dangers incidental to a dense population.

"Of the advantages of Colton as a winter home for invalids, there can be no question.

"Its freedom from fog, rain, and wind; its elevation and pure water; its remarkably dry soil and air; conditions which, taken together, are almost the antithesis of those which develop phthisis.

"Its proximity to neighboring cities and the mountains by sev-

eral lines of railroad, give it peculiar advantages. During the summer months the thermometer ranges at midday from 90° to 115°. During the day there is a strong sea-breeze, but the nights are still and cool. To one who has not seen the fact demonstrated it is incredible that such a burning heat could be either grateful or beneficial; but, in this dry heat, where the functions of the skin are at their maximum, and the heat-producing forces of the body at a minimum, phthisical patients often do well, and it seems that at this season, more than any other, the alterative influence of climate is most marked.

"Invalids with almost any disease, especially rheumatism and phthisis, do well at Colton throughout the year; but those suffering from diseases of the nose, pharynx, or larynx, characterized by scanty secretion, find the winters very pleasant, but the summer the reverse, and should not remain here during the heated term."

Hesperia Valley consists of thirty-three thousand acres of land—a silicious loam—twenty-five miles north of San Bernardino, along the line of the Atchison, Topeka, and Santa Fé Railway. This valley is noted for its abundant supply of water for irrigating purposes, which is taken from Hesperia Creek. The altitude of this valley is three thousand feet above sea-level. Its climate is especially adapted to persons suffering from asthma and bronchitis.

East San Bernardino Valley.

The tourist who visits the city of San Bernardino will want to take a carriage for a day's drive in the East San Bernardino Valley.

First, there is for four or five miles what is known as Old San Bernardino one continuous panorama of beautiful homes and rich orchards. The one the illustration represents is typical—neither better nor worse than the average. This is the home of Mr. Frank Hinckley, in Old San Bernardino, four miles from the city of San Bernardino. The hedge that is in front of the house is entirely of roses.

Residence of Frank Hinckley, Esq., Old San Bernardino.

There are over two hundred varieties, and there is never a day in the year but some portion of this California fence is in bloom. Here are lime, lemon, and orange trees loaded with fruit, and the tourist will find Mr. Hinckley ready to show all of these semi-tropic treasures in a hospitable manner.

Driving on east, one soon reaches the ruins of the San Bernardino Mission, that was founded in 1820. Now higher ground is reached; and here is seen a picture of elegant houses and young orchards.

This is a new community. Here is a soil of surpassing richness, a climate that is of great benefit to the invalid, and a people of wonderful enterprise. Soon after driving through a roadway between two lines of palms a prosperous town is reached. In September, 1887, there were between forty and fifty brick storerooms and over four hundred other houses, where nine months before there was not a house. This is the town of—

REDLANDS, seven miles east of the city of San Bernardino. Here the orange-tree bids fair to reach the acme of productiveness. People of wealth are rapidly coming here and building homes where they desire to spend the balance of their days away from the trials and dangers of the winter cold or the summer heat of the Atlantic coast. One half mile north of Redlands is—

LUGONIA, a flourishing new town. In both of these places there are banks, churches, school-houses, hotels, etc. North of Lugonia three miles is the section of country known as the Highlands, right up at the base of the mountain—a section of the country which is to San Bernardino what the Monrovia and Sierra Madre country are to Los Angeles. Highlands is also an excellent fruit-country. The altitude is from 1,500 to 2,000 feet.

From here is but a short drive to Arrowhead Springs, where there is an excellent hotel. After getting a good

lunch the tourist should drive back to San Bernardino by way of the Rabel and Harlem Hot Springs. Nowhere in Southern California can a day be spent more pleasantly than in taking this drive. Motor lines will soon be completed to all of these places, but even then it will be pleasanter to make this round in a carriage with a driver who is posted. If a longer drive is desired,

CRAFTON, a few miles east of Redlands, will be found a romantic spot, well worthy a visit.

BEAUMONT is a town on the Southern Pacific Railroad, twenty miles east of San Bernardino. The following, from Dr. J. W. Root, a graduate of the University of New York, who resides there, is full of valuable information. Dr. Root came to Southern California from Pennsylvania in 1884 suffering from phthisis. On his arrival he was unable to walk; but from within six months of that time up to the present date he has been in active work:

"Nearly every town in Southern California possesses some climatic differences from its neighbor, either to its advantage or disadvantage. My intention in this brief paper is to give the reader, and seeker after health, some idea of the climate of Beaumont and vicinity, formerly San Gorgonio. Beaumont is situated in the San Gorgonio Valley, on the S. P. R. R., eighty miles east from Los Angeles, twenty miles from San Bernardino and Colton, and about thirty miles from Riverside.

"This beautiful and fertile valley, twelve miles in length and six miles in width, lying between the San Bernardino Mountains on the north and the San Jacinto Mountains on the south, is in a situation peculiarly adapted by nature to healthfulness of climate. We are entirely free from all miasmatic diseases. The altitude of this valley is moderate, ranging from 2,500 to 3,000 feet; northward the San Bernardino Mountains loom up to a height of 11,800 feet; in the southeast San Jacinto rises 9,000 feet; and looking westward the snow-capped peak of 'Old Baldy' is distinctly seen. Truly, our mountain scenery can not be surpassed in beauty—one visitor re-

marked to me that she had never appreciated the beauty of California's mountains previous to coming here.

"Invalids who wish to try a higher altitude than this of the town, can, within a distance of eight miles, find any altitude they desire up to 6,000 or 7,000 feet; and on the ranches which dot the mountain's side can find very comfortable accommodations.

"Pure water is always a desideratum, and here we have it as pure as ever flowed from mountain springs, piped from the mountain cañons to the town. Perhaps the one feature which strikes the invalid, and indeed all visitors to Beaumont, more forcibly and favorably than any other, is the almost total absence of fog. We seem to be beyond and above the fog-level. Occasionally, however, when a strong west wind prevails, the fog is forced up the pass from the valleys below, but the first rays of the morning sun dispel it.

"From the foregoing remarks the reader can readily infer that the air is remarkably dry, pure, and invigorating; the air at night is almost as free from moisture as during the day, and through the summer months the invalid as well as the strong can oftentimes enjoy the evenings out-of-doors with comparative impunity.

"According to a record kept during 1886 at the Highland Home Hotel, the lowest point reached by the mercury was 36°, and the highest 102°.

"Our prevailing winds during the summer are from the west; and although this ocean-breeze passes over one hundred miles of warm, dry country before reaching us, it is yet cool and refreshing, tempering what would otherwise be extreme heat, and rendering our summers pleasant and attractive, and not at all enervating.

"Sometimes, however, instead of this ocean-breeze, we get one from the desert, and then the heat is oppressive.

"But this, like every other place, occasionally gives the bitter with the sweet. One of our unpleasant features, I might say almost the only one, is the strong east winds, or rather north winds, which sweep around the San Bernardino Mountains and up the pass from the east. These winds amount sometimes to almost a gale, and continue for two or three days; they are very drying in their nature, absorbing every vestige of moisture in their path; however, they are of only occasional occurrence during the autumn and spring months.

"With the exception of those cases in which altitude is contra-

indicated, invalids of all classes do well here, particularly those afflicted with pulmonary diseases, such as phthisis, bronchitis, catarrhs characterized by abundant secretion, and asthma."*

Eight miles east of Beaumont is BANNING, with an altitude of 2,500 feet, and with a special reputation for benefiting asthmatics. From here a person can make an interesting study of the Mission Indians. All kinds of fruits usual in Southern California, except oranges, lemons, and limes, are raised here.

Fifty miles east of San Bernardino is SEVEN PALMS station, from which a daily stage carries passengers to the noted Agua Caliente Springs, seven miles away.

Away up in the mountains, thirty miles northeast of San Bernardino, at an elevation above sea-level of 6,400 feet, is an artificial lake five miles long, that contains ten billion gallons of water. This is the Bear Valley Reservoir. The dam that retains this great body of water is of solid masonry, three hundred feet long and sixty feet high. It is twenty feet through at the bottom and three feet in width at the top. Sixteen hundred barrels of cement were used in the construction of the dam. It was all hauled one hundred miles. A four-horse team hauled eight barrels of cement, and was ten days in making the round trip.

In another part of this work the reader has learned what an inch of water is; and the fact that this reservoir furnishes a continuous stream of six thousand inches during the irrigating season, gives an idea of the large body of land this reservoir will irrigate.

WINES OF SAN BERNARDINO COUNTY.—The following, from Major Ben C. Truman, in the "New York Times," is a valuable summary:

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* "Beaumont as a Health-Resort," "Southern California Practitioner," 1887.

"There are many thousands of as fine agricultural lands in San Bernardino County as there are anywhere in the State, and these are well watered by either natural or artificial streams which meander through many of the prettiest vineyards and orange-groves in the State. There has been little or no attention paid in San Bernardino County to making fine wines; and, as a general thing, what has been said of San Diego may be said of most of the vineyards and their products of San Bernardino. There are some exceptions, however, conspicuously the Cucamonga vineyards, which make what has been a favorite wine with Californians and others for more than twenty years. It is a mellow white or slightly colored wine, probably strengthened by either sugar or brandy, and has a uniformly good sale. It has rather a nice bouquet and aroma when sipped from a sixteen-year-old puncheon, and should make a good lunch or visiting wine. I recollect going through the Cucamonga winery some eighteen years ago and tasting a variety of vintages, which taught me a lesson that has always been of service to me; and I can now spend an afternoon in a winery without experiencing difficulties in the way of exit, or in getting on my hat the next morning. Then there are some other vineyards that have turned out a good stay-at-home red or white wine.

"There are still some other producers that have paid little or no attention to the introduction of improved grapes, and who, of course, have as yet no opportunities of blends, but who have made wines that have been considered good enough for home (county) consumption, or for sale in Arizona. A great many of its grapes have been annually made into wine in Los Angeles County, as its soil is well adapted to the cultivation of the vine and its berry. It has always been a leading wine-making-grape county, and five years ago was the fifth on the list with its 1,213 acres of vines, while it has, besides, 342 acres of wine-vines four years old, 320 acres of three-year-old ones, 220 acres of two-year-olds, and 315 acres planted in 1886. These figures do not include either table or raisin grapes, of which there are nearly 100 acres of the former and 1,700 acres of the latter."

San Bernardino County's water-supply for irrigating purposes is tersely outlined in the following, from the San Bernardino "Daily Times":

"The Santa Ana River, where it comes out from the mountains, furnishes water for the North and South Fork ditches. The North Fork ditch furnishes water for Highlands and the Cram Settlement. The South Fork ditch supplies water for Lugonia, Brookside, and Redlands.

"Mill Creek comes down from the mountains a few miles southeast of the Santa Ana River, and furnishes water for Crafton and Old San Bernardino.

"A stream running down from the south slope of San Bernardino Mountain furnishes water for Banning.

"City Creek, west of the Santa Ana River, furnishes water for a portion of Highlands.

"The stream from Devil's Cañon supplies water for a portion of the Muscupiabe Rancho.

"Lytle Creek, coming down from Old Baldy, west of Cajon Pass, irrigates Mount Vernon and vicinity.

"Etiwanda Cañon irritates the settlement by that name.

"Another small stream furnishes water for Hermosa.

"Cucamonga is irrigated by a stream fed by springs that rise just north of that settlement.

"Cucamonga Cañon irrigates the Iowa tract.

"San Antonio Cañon, on the line between Los Angeles and San Bernardino Counties, is equally divided between Ontario on the San Bernardino side, and Pomona and other lands on the Los Angeles side.

"San Bernardino is situated in the midst of moist lands where artesian wells can be had anywhere by going to a moderate depth.

"Warm Creek rises from springs in the main valley, away from any mountains. This creek flows into the Santa Ana River, east of Colton, and unites with the waters of that stream that rise within a few miles of the junction.

"The Meeks and Daley ditch is taken from Warm Creek, and irrigates a section of country below Colton.

"The Santa Ana River, in ordinary seasons, is dry for many miles below, where all the water is taken out to supply North and South Fork ditches. The waters of Warm Creek and other smaller tributaries, however, furnish a good stream again, which is taken out by the two Riverside canals to irrigate Riverside. In dry seasons these two canals take all the surface-water out of the river at

these points, leaving the underflow to come to the surface below; but Spring Brook, which rises just northward of Riverside, replenishes the stream again.

"The Jurupa ditch is taken out of the Santa Ana River, that irrigates West Riverside.

"The Yorba Settlement, including the property of the South Riverside Vineyard Company, located on the Santa Ana River, sixteen miles below Riverside, again takes all the surface-water out of the river for that settlement, but other streams coming in from the north side of the river make a good stream that goes down to supply irrigation water for settlements in Los Angeles County.

"One of these feeders is a short stream that comes from a single spring that, summer and winter, furnishes two hundred and fifty inches of water that runs a grist-mill within a mile of the spring.

"There are other small, natural water-supplies, but we have enumerated the principal ones in this county.

"A stream of water for irrigation purposes in this valley is considered well worth $1,000 an inch, measured in an ordinary midsummer, and some water-rights are selling at a higher figure. Hence, every small stream that can be utilized, is made valuable. The value of water is, of course, dependent, to a certain extent, on its location, for a small stream that will develop a small settlement is not so valuable per inch as a large stream that will make possible a larger settlement.

"About all the natural supplies of water having been utilized, people have turned their attention to the development of water. This is done in three ways:

"1st. Artesian wells.

"2d. Tunnels.

"3d. Reservoirs.

"There are artesian belts where flowing wells can be readily and cheaply obtained. The artesian belt in this valley is now pretty well defined, and outside of this belt experiments are made at great risk. Usually, flowing water is obtained in moist and semi-moist land, and very rarely on the high mesa lands. Tunnels are being used now to save the underflow of mountain-streams. Two are now in process of construction in this county. Judson & Brown have one in the bed of the Santa Ana River, below where the

water is taken out of the stream to supply the North and South Fork ditches.

"The Ontario Land Company have driven a tunnel in under San Antonio Creek a distance of nearly 1,800 feet, at a cost of about $52,000, and they have about 250 inches of water, worth a quarter of a million of dollars.

"There are scores of places in the county where tunnels can be run in under the beds of streams, where they come out of the cañons upon the plains, and the underflow saved for irrigation purposes.

"The first attempt at a storage-reservoir in this county was made by Judson & Brown at Redlands. This reservoir has never been completed as at first planned, but it is now used as a distributing-reservoir only. When completed it will hold winter water enough to irrigate several hundred acres of land. M. H. Crafts next commenced a storage-reservoir for Crafton, which will be a great aid to the irrigating system of that settlement.

"In addition to these is the Bear Valley Reservoir, the largest irrigation-reservoir in the State, which has been described."

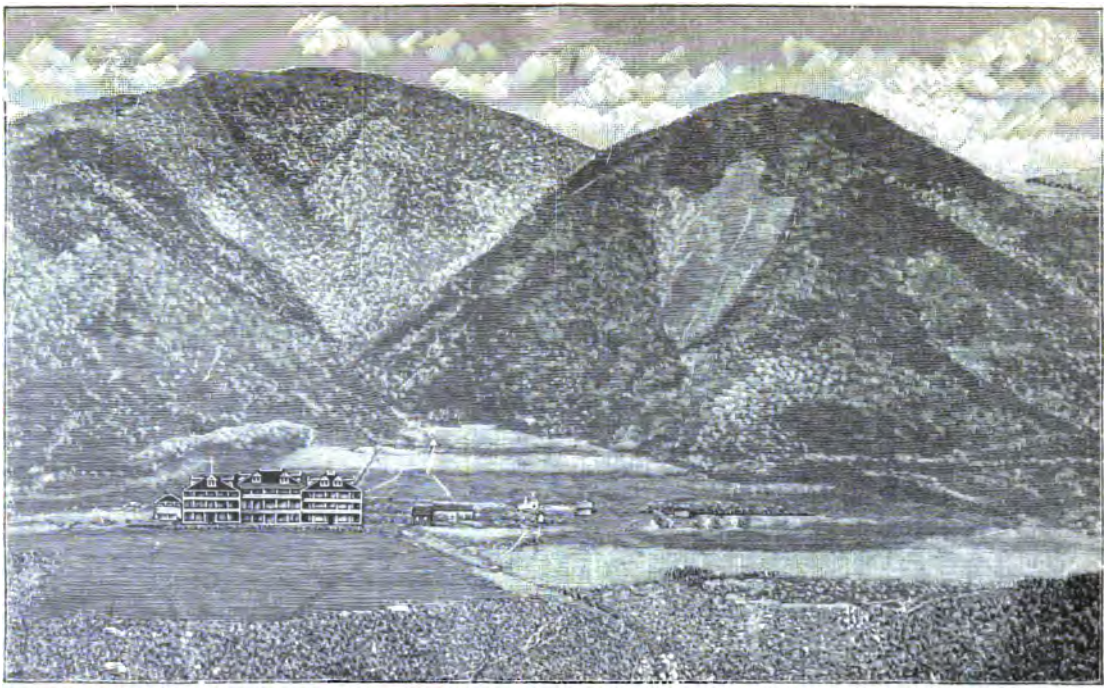
Mineral Springs of San Bernardino County.

There are at least one thousand hot springs in this county, and to see, as the writer of these lines has, hundreds of thousands of gallons of this hot water, "Like a hell-broth," boil and bubble up out of the earth, makes one feel as though this crust upon which he tarries is but a great witches' caldron. Every tourist should stop at San Bernardino and visit some of these springs.

The most noted of them all are the ARROWHEAD HOT SPRINGS, and the following note * from Prof. John Dickenson, A. M., of the University of Southern California, gives an excellent idea of them :

"About six miles north of the city of San Bernardino, on the face of the mountain-wall overlooking the valley of the same name, may be seen clearly outlined against its background of desert vege-

* "Southern California Practitioner," September, 1887.



Arrowhead Hot Springs, San Bernardino County.

tation, the figure of a colossal arrowhead, *about a quarter of a mile in length*, its point directed toward the mouth of the subjacent cañon, in which burst forth the springs of hot mineral water, which give, in addition to the climatic charms of the region, its reputation to the locality as a health-resort.

"The Arrowhead Springs lie at the southern foot of the San Bernardino Mountains—a continuation eastward of the Sierra Madre—in the midst of a region of metamorphic rock—gneiss, mica-schist, feldspathic syenite, etc.—the decomposition or chemical action of which seems to furnish not only the heat that almost boils the water, but the mineral substances held in solution therein. Hot mineral springs are found all along the base of the above-mentioned mountain-wall, but the point where the chemico-thermal activity seems to be the greatest is at the locality indicated above. Here there are about twenty-five springs within a small compass, the temperature ranging from 140° to 193° Fahr., the solid constituents being, according to an analysis made by Prof. Hilgard, of the University of California, as follows:

Analysis.

Temperature of water, 193° Fahr.	
Sulphate of potash, grains per gallon	4·001
Sulphate of soda, " "	42·476
Chloride of sodium, " "	8·178
Lithium	Strong test
Sulphate of lime, grains per gallon	1.343
Carbonate of lime, " "	1·343
Barium	A faint test
Free sulphureted hydrogen, cubic inches per gal	644
Strontium	Well marked
Sulphate of magnesia	146
Carbonate of magnesia	321
Silica	4·942
Organic matter	Trace
Total solid contents	62·984

"The ground in some places around the springs is saturated with the hot mineral water to such an extent that it is used in giving the so-called 'mud-baths,' the patient lying in a suitably-constructed box filled with the hot mud, in which his person is immersed for a suit-

able length of time. The springs are much resorted to by persons suffering from rheumatism, skin-disorders, blood-poisoning, etc., and the waters are used freely both for drinking and for bathing.

"The comfort and pleasure of the sojourner at the springs are greatly enhanced by the charms of climate and scenery. The large and well-appointed new hotel stands at a height of 2,000 feet above the sea and 1,000 feet above the city and valley of San Bernardino, on a little plateau, between two branches of the cañon, which opens into the valley just below.

"The eye ranges southward and westward over San Bernardino, Colton, and Riverside, over the intervening hills to the distant Santa Ana Mountains, and eastward beyond San Gorgonio and San Jacinto toward the desert. The view is one of rare beauty and grandeur. The air is dry and bracing."

These springs were formerly called San Bernardino Hot Springs. W. P. Blake,* geologist of the United States survey, who visited this vicinity between the 3d and 6th of November, 1853, describes the continuation of this series of springs, at a point lower down, as follows :

"The warm and hot waters gush out from the granitic rocks on the flanks of San Bernardino and adjacent heights. In one place the springs are so numerous, and the water rises in such a volume, that a good-sized mill-stream of hot water is formed, which flows down into the valley, and is one of the principal tributaries of the Santa Ana River. This brook of hot water retains a temperature of 100° Fahr. three or four miles from its source.

"I visited several of the springs on the sides of the Sierra, between San Bernardino Mountain and the Cajon Pass, near the saw-mill road. It was evident that the adjacent granite was very near the surface, as shown by one or two outcrops, from one of which the hot water issued. Small springs rise at intervals of ten or twenty feet along a distance of thirty or forty rods. Their waters unite and form a little stream that empties into the brook a short distance below. The banks of the stream were thickly overgrown with grass.

* "Mineral Springs of the United States and Canada," Geo. E. Walton, M. D. D. Appleton & Co., New York, 1886.

A dense mass of beautiful green confervæ grew from the bottom and sides of the channel, and floated in rich waving masses in the hot water. In the immediate vicinity of the springs, however, no vegetable growth was visible. The rocks and gravel in contact with the water were covered with a snow-white incrustation, and little twigs and leaves that had fallen into it were softened to a white, pulpy mass, and were partly incrusted. This was also the case with insects that were lying dead in the shallows of one of the springs, but I could not observe that in either case any petrifaction or internal deposit of mineral matter had taken place. The following temperatures were observed: 172°, 169°, 166°, 130°, 128°, 108° Fahr.

"The white crust was not found in equal quantities at all the springs. It appeared to be most abundant at one of them. . . . An analysis of the crust (by J. D. Easter, Ph. D.) since the return of the expedition gave the following results:

"The aqueous extract contained only a small proportion of chloride of sodium. In hot hydrochloric acid the mass dissolved with strong effervescence, leaving a residue of silica and alumina. The solution contained—

"Lime (carbonate), chief constituent.

"Silica (soluble in acid).

"Magnesia.

"Alumina and oxide of iron, traces.

"Phosphoric acid, trace.

"The springs are estimated to be at least 500 feet above the level of the Santa Ana, at the Mormon settlement, and thus nearly 1,618 feet above the sea.

"These springs are not the source of the large stream of water first referred to. It takes its rise farther eastward, near the mountain of San Bernardino. I regret that I could not visit its source, as the springs must be of great volume and high temperature to send forth such a large stream of water retaining its temperature a long distance from the mountains. I was informed there are several other localities of hot springs along these mountains, and there are, no doubt, many that have not yet been discovered. The large stream of hot water appears to be nearly pure."

I am indebted for the following information to Dr. J. W. Hazlett, formerly of Philadelphia, but at the present

time an active practitioner in the city of San Bernardino :

"Just east of the Arrowhead Springs, about one half mile distant and at a little lower elevation, there are quite a number of valuable springs, in every respect similar to the Arrowhead, situated on a ranch owned by Mr. Harrison. I have understood that he accommodates a few private boarders at times.

"West of the Arrowhead Springs, at about the same elevation, there are several other hot springs, of about the same composition, situated on Governor Waterman's homestead ranch. Still nearer the center of San Bernardino, about three or four miles distant, there are several mineral springs, both hot and cold, one set known as the Rabel's Hot Springs, about three miles distant, and reached by street-cars on Base Line Street. The other, the Harlem Hot Springs, are about one mile farther east on Base Line Street, formerly known as the Warm Creek Springs, because they are the origin of quite a large stream by that name, which flows through the valley and empties into Lytle Creek. There is connected with these last two, as also with the Arrowhead, large basins of lukewarm water for still-water swimming and bathing, largely enjoyed by the young people of this vicinity. The accommodations at these springs are moderately good. There are several fine hot mineral springs in Lytle Creek Cañon near the Glenn Mountain Ranch home, about ten or fifteen miles from San Bernardino. The waters contain large quantities of iron and sulphur. There is a comfortable bath house and tub at the springs, but no boarding-place nearer than Glenn's, two miles distant at least, and can only be reached by private conveyance. The Temescal Hot Springs, formerly owned by Major Thorndyke, are situated about twenty miles from San Bernardino and ten miles from Riverside, along the foot-hills on the northeast side of the Temescal Range. They can be reached only by private conveyance. The temperature of the waters ranges from 86° to 112° or more, varying at times. It contains about the usual minerals. Probably the best hot mineral spring in San Bernardino County is the one known as the 'Agua Caliente,' situated in the foot hills on the northeast side of the San Jacinto Mountain, between eighty and one hundred miles from San Bernardino, and about seven miles from the Seven Palms station on the Southern

Pacific Railroad. A stage makes daily trips from the station to the springs, where one can find good accommodations. The waters of these springs have always been considered by old residents as possessing peculiar virtues in rheumatism and skin-affections especially specific forms. I have never heard of any reliable analysis of the waters having been made, but have examined several specimens at different times myself, and found them to contain very large proportions of sulphur and iron, and I believe some special forms of soda, such as borax. Away up in the Santa Ana Cañon, on the ranch belonging to Charles Lewis, better known as 'French Louis,' there is a fine cold-water mineral spring, the ingredients being principally iron salts. This spring is about forty miles from San Bernardino. The hotel accommodations consist of four log cabins and several tents. They are not first-class with respect to lodging, but good, healthy food is abundant. Plenty of sport in trout-fishing and hunting. The elevation here is nearly five thousand feet above the sea-level.

"In Bear Valley there are several hot and cold mineral springs that are said to be very abundant in mineral salts. These are about sixty miles distant from San Bernardino, at an elevation of six thousand feet. There are no hotel accommodations. East of Bear Valley, in the 'Twenty-nine Palms district,' there are several more mineral springs, which are chiefly cold.

"Here in the middle of a vast sand desert is one of the finest cold-water springs I have ever had the good fortune to see and taste. It is a cavern spring, the water dripping from the roof of the tunnel into a basin dug out of the clay, about three feet from the floor. It is as cold as any natural water I ever tasted. The temperature outside the tunnel frequently reaches 120°. There are a few other mineral springs situated in the Mojave River region, distant about forty miles from San Bernardino, the names of which I am not familiar with."

Riverside.

Ten miles South of San Bernardino, seven miles south of Colton, fifty miles east of the Pacific Ocean, and sixty miles east of Los Angeles, is Riverside, the most noted orange section in San Bernardino County. The population

is about five thousand. Scarcely a person in the United States who can read but has learned of Riverside.

Even the visitor from other portions of Southern California, who has been accustomed to orange-trees draws a deep breath of astonishment when he sees the wondrous beauty of the Riverside orange-grove.

It is true there are soil, climate, and water just adapted to this industry, but the potent factor back of these elements is an industrious, enterprising population, who take a pardonable pride in the beauty of their place.

Hon. Frank Pixley, editor of the San Francisco "Argonaut," visited Riverside just after an extended trip through Europe, and then wrote: "I stopped at Riverside. Of all the places in Europe or America that I have ever seen, this is incomparably the most interesting, the most prosperous, and most beautiful." Rev. Thomas K. Beecher, of Elmira, N. Y., calls it "a garden-plat ten miles long." Mr. Beecher says: "One can ride or walk mile on mile through vineyards and orange-groves, the wayside delineated by hedges or shaded by eucalyptus-trees sixty feet high, almond-trees in bloom, peach, pear, apricot, fig, and walnut thrown in for luxury and variety! The roads are hard and ringing beneath the trotter's feet, avenues of residences, whose architecture is of no mean pretensions; fountains, flower-gardens, pastures, and mowing-plats; in short, a garden township without a wasted acre."

These comments of Messrs. Pixley and Beecher were made about five years ago, and great has been the change since then. Riverside has been extended, its water-supply greatly increased, a still finer class of residences built, railroads to Santa Ana, Los Angeles, Colton, San Bernardino, and San Diego now take the place of the stage of those days, while large brick blocks and busy streets indicate that Riverside, beside being a health and pleasure resort, is also becoming a business center.

Roubidaux Hotel, Riverside.

Waring's system of sewerage, recently completed, carries the sewage miles away to be used for fertilizing. The Gage water-system is about completed, by means of which a large amount of pure water will be brought in pipes from the artesian wells nine miles away. An opera-house, seating 1,200 people and costing $50,000, a high-school building costing $50,000, a Y. M. C. A. hall to cost $20,000, are all in course of construction.

The greatest enterprise is the Hotel Roubidaux, now building. This hotel has an altitude of 990 feet and a frontage of 820 feet. It has 270 bedrooms, so arranged that all are sunny. Mr. A. S. White, the president of the company, says he hopes to have the hotel completed and furnished by the first of January, 1888. The Rowell and Glenwood are two excellent hotels.

ORANGES.—The Riverside orange has the greatest reputation and brings the highest prices in the market. The prospects are that 1,000 car-loads of oranges will be shipped from Riverside during the winter of 1887–'88.

At the World's Fair at New Orleans, Riverside oranges came out victorious by taking the following prizes: One gold medal for the best twenty varieties of oranges—open to the world. One gold medal for the best twenty varieties of oranges—open to the United States. One gold medal for the best twenty varieties of oranges—open to California.

Average rainfall, in inches.

PLACE.	Period of observation.	Spring.	Summer.	Autumn.	Winter.	Year.
Los Angeles, Cal.	5 years.	3·73	0·01	1·91	7·23	12·88
San Francisco....	20 "	4·80	0·49	2·68	12·32	20·29
Asheville, N. C...	11 "	....	....	....	....	40·20
Cincinnati.....	41 "	11·17	12·67	6·29	9·83	42·96
New York City...	29 "	11·43	13·08	11·20	10·81	46·52
Jacksonville, Fla.	13 "	19·01	21·27	13·07	8·66	53·01
Riverside, Cal....	6 "	....	....	....	....	10·40

RAISINS.—As has been stated before, raisin-grapes need a dry atmosphere, and the foregoing comparative table gives an excellent idea of Riverside adaptability for this purpose.

It is estimated that Riverside will export 2,000 tons of raisins during 1887.

Riverside takes great pride in her Magnolia Avenue, a beautiful drive, 132 feet wide and 12 miles long. This avenue is lined with eucalyptus, pepper, palm, orange, and magnolia trees. It is well worth seeing. Here, again, it should be said that no tourist who crosses the Rocky Mountains can afford to miss a drive down this avenue.

Riverside has two daily papers, "The Daily Press" and "The Daily Enterprise." The "Press and Horticulturist" is a weekly paper, edited by L. M. Holt, one of the most noted writers on the Pacific coast, and is full of information about this country.

Riverside has ten churches, two banks, and the usual number of secret societies. Trains from San Bernardino and Colton connect five times daily with all overland trains on Southern Pacific and Santa Fé roads. The tourist can go to Los Angeles from Riverside by way of Colton, San Bernardino, or Santa Ana, just as he chooses.

On the railroad between Riverside and Santa Ana are two new villages — RINCON and SOUTH RIVERSIDE. The latter is 17 miles from Riverside proper, and has a bank, etc. It bids fair to be a good town.

CLIMATE OF RIVERSIDE.—Drs. J. F. T. Jenkins and W. B. Sawyer, both practitioners of Riverside, have written interesting papers on this subject.

Dr. Sawyer, a graduate of Harvard, came to Riverside on account of pulmonary trouble. As soon as he was able to be around, he sought some outside business. He finally purchased a dairy and drove the festive milk-wagon around at an unearthly hour in the morning.

The Doctor has long since resumed practice, and the following is from his pen.*

. . . . . .

"To the north, twelve or fifteen miles, is the range of San Bernardino, its eastern peak 11,000 feet high, snow-capped and cold, falling rapidly off to the westward, where for miles the summit is clothed with pine forest. Just over the divide lies the desert, two hundred feet below sea-level, and between the two nearly every altitude may be found at all desirable for a consumptive. If any patient or his physician desires a higher altitude, perhaps it would be as well to stay at home.

"To the east, between Riverside and San Jacinto Mountain, are two table-lands, separated by a range of foot-hills. The first, upon which this city is built, about nine hundred feet above sea-level; the second, upon which are found the settlements of San Jacinto and Perris, and many so-called dry ranches (because not supplied with water by irrigation-ditches), about fifteen hundred feet in altitude. To the southeast, rising rapidly from the very city itself, is an irregular mass of hills and sloping plains overlooking, to the west the Riverside plain, to the east the San Jacinto, and to the south Elsinore, with its pretty lake. This, the Gavalon (Hawk), contains the now quite famous tin-mines, the Minafe, Santa Fé gold-mines, and, scattered about among the hills, wherever there is a spring or flat with grass and the possibility of well-water, the ranches of settlers.

"To the south, twelve miles, stretches Arlington, one vast orange-grove, with the fruit now turning yellow.

"Below Arlington the land slides off in a gentle decline a few miles, until it meets the northern slope of the table land, behind which, and of the same name, is the range of mountains known as the Temescal. Through a break in this chain runs the Santa Ana River in its cañon, up which comes the sea-breeze and an occasional errant fog.

"To the west, first the river, which, like most California streams, runs upside down, the bottom being on the top and the water underneath; then more table-lands and foot-hills, till twenty-five miles

* "A Study of Riverside Climate, with Suggestions as to its Adaptability to Cases of Phthisis." By W. B. Sawyer, A. M., M. D., "Southern California Practitioner," March, 1887.

distant is the Cucamonga Range, at the base of which are Ontario, Cucamonga, and Etiwanda.

"The city proper rests within a small half-circle of foot-hills, approaching quite close on the west and north, and but a couple of miles distant on the east, though north and south are broad areas of plain-land sloping to and away from it southerly.

"An area of ten by twelve miles is incorporated as city limits, but this embraces Arlington and much outlying country. The entire population numbers 3,010, of whom about 1,500 live in the town proper, and the remainder on the fruit-ranches adjacent above and below.

"The climatic and atmospheric conditions resultant from this geographical situation, elevation, and distance from sea and mountain are unique.

"First, as to temperature. It is warm, but not hot, reaching in the summer months a maximum high point of 108° to 110°, and in the winter from 78° to 80°. The average during the six summer months from sunrise to sunset is only 73½°, and in the winter months 60°. The very extremes of heat and cold are touched but seldom and at long intervals, and last but a short time. The high point is reached somewhat earlier and the low point a little later than usually observed elsewhere, the former being gained generally during the hour between noon and 1 P. M., and the latter at or very shortly after sunrise. The usual nightly fall and daily rise is more marked, if anything, than in colder climes, and it comes with greater certainty, regularity, and evenness. In the summer months it is greatest, in the winter least—the average variation for January being 20°, and for July 34°. The night is rare when overcoat and blanket is not welcome and comfortable, and the day unusual when wraps are needed at noon. The causes for these are, first the sun. It is a universal observation that nowhere is its influence so potent. Obscure the sun in winter, and the prevailing chill of the atmosphere drifting and settling from the snow-clad mountains is at once apparent. Morning and evening house-fires are essential, and the shady side of the street is unsafe for the invalid. The sky is little clouded even in winter, as compared with the clear days, and from its first rising till its setting, the one most prominent, most irresistible, and most emphatic feature of landscape and climate is the sun. It is only, apparently, a question of time, there being no appreciable difference between the heat-producing quality of its rays between

December and June. Hence the high daily average of winter. A second cause alike of the constant day and night variation and of its excess in summer over winter months is the exceeding dryness of the soil. As soon as the effect of the winter rain has passed, usually by the latter part of May or first of June, there is no moisture at all in the soil for many feet below the surface, except in the comparatively small oases of irrigation. Radiation at night is unhindered, rapid, and complete.

"Again, the slope of the land to the south gives a larger proportion of the sun's rays to each square foot than if level or sloping northward, and hence the absorption of heat is a little in excess of normal, while the night radiation is the same.

"As quite prominently affecting the temperature should be mentioned the cool sea-breeze blowing unremittingly during the summer months from the southwest and the desert winds from the north and east through the San Gorgonio and Cajon Passes. The latter come once in three or four weeks during the winter season, flushing contagion from the valley and bringing a warm breath from the Mojave, and uncomplimentary language to the lips of the natives.

"The following statistics of thermometrical observations, while somewhat cumbersome, seem necessary to give an accurate and tangible shape to the purpose in hand. The first table was compiled from a record kept by Dr. J. P. Greves, of Riverside, from the year 1870 to 1875. The high and low points are not absolute, as the thermometer used was not of automatic register, and the records only show the variations as taken at 7 A. M., 7 P. M., and 12 M. The highest and lowest points are given as recorded for these hours with the monthly averages therefrom. The absolute high point being more nearly reached by the noon observation than the low point by either that of the evening or morning, the average mean would be materially less. The record is of great value as showing the variations during the twelve hours of daytime, and because extending over a series of four years.

"The second is a table prepared by Mr. A. K. Holt, of the Riverside 'Press and Horticulturist,' and recently appointed Signal-Service officer at this point. The accuracy of the record is undoubted, but it must be borne in mind, in comparing it with Signal-Service tables, that the latter are made from observations taken from forty to one hundred feet above ground, while these were at the level:

MONTH.	1870. Highest point.	1870. Lowest point.	1870. Average for month.	1871. Highest point.	1871. Lowest point.	1871. Average for month.	1872. Highest point.	1872. Lowest point.	1872. Average for month.	1873. Highest point.	1873. Lowest point.	1873. Average for month.	AVERAGE FOR FOUR YEARS. High.	Low.	Mean.
	12M.	7A.M.		12M.	7A.M.		12M.	7A.M.		12M.	7A.M.				
October..	91	50	67¼	100	43	71·1	104	40	70·5	98	39	69·5	98¼	44¼	69¼
Novemb'r	89	41	64	87	38	62·2	89	36	64·3	92	43	58·3	89½	39½	62½
December	80	31	51½	85	36	59	87	31	59·3	67	37	59	76¼	34¼	57½
	1871.			1872.			1873.			1874.					
January..	78	32	56	76	32	57·2	82	33	58·2	78	34	52	78¼	32¼	56½
February.	48	32	55¼	82	37	55·2	78	35	55	78	34	52	77¼	34½	54½
March....	84	40	62½	81	40	56·3	85	42	64	72	37	55	80¼	39¼	59½
April....	86	42	63¾	98	43	58·1	92	40	65·2	87	33	59 2	89¼	39¼	61½
May.....	98	52	68¾	96	52	66·1	90	57	71·1	89	54	65	93¼	53¼	67¼
June.....	97	55	75·2	110	58	78·3	100	57	66	109	56	74	101¼	56¼	73¼
July.....	104	62	80	98	60	75·3	105	60	78·2	104	60·5	79·2	101¼	60¾	TS
August...	106	62	80¾	105	63	81	100	61	81	108	63	81·2	104¼	62¼	80¼
Septemb'r	100	51	77·2	106	51	81·3	104	61	82·2	99	52	78·1	102¼	53¼	79¼

Statistics, 1885–1886, Riverside, Cal. Recorded and compiled by A. K. Holt, at office of Riverside "Press and Horticulturist."

DATE.	Average temperature.	Lowest temperature.	Highest temperature.	Clear days.	Cloudy days.	Hazy days.	Rainfall, inches.
1885.							
July.....	73·8	56·7	90·7	29	1	1	0
August.....	78·5	62·5	94·5	23	2	6	0
September	70·8	53·8	88·0	29	0	1	0
October.....	64·4	48·3	80·5	27	1	3	·02
November.....	55·9	44·2	67·6	15	10	5	1·35
December.....	53·0	40·2	65·8	23	6	2	·64
1886.							
January	52·0	42·0	62·0	16	14	1	3·27
February	56·3	41·7	70·8	22	6	0	1·38
March.....	53·1	40·9	65·3	22	7	2	1·95
April.....	57·7	45·2	70·2	20	9	1	1·43
May.....	66·8	50·4	83·2	27	0	4	0
June.....	71·0	55·2	86·8	29	0	1	0

"Second, as to moisture Until within a few weeks, no humidity observations have been made, and no record is at hand. The precipitated moisture in the shape of rain has been measured, however, and carefully tabulated by numerous observers, and the accurate statistics for six years, beginning in 1880, furnished by Mr. A. S. White, are appended. The seasons are divided into wet and dry

in preference to summer and winter, but these terms are unfortunate, as they convey no adequate idea of the facts to one unacquainted with the locality. The ordinary wet season at Riverside is much drier, has less rain, and a larger proportion of dry, clear, sunshiny days than the average summer in New York, Boston, or Chicago. The name wet season is given to the months between September and June because during that time all the rain for the year is apt to fall, and because for the remainder of the year no rain falls.

"During this period the rain falls in showers of from one to four days' duration, there being between these showers intervals of four days to weeks of clear open weather.

"In addition to the precipitation in rain, occasional and very infrequent fogs add a trifle to the total moisture. They drift into the valley from the seaward, coming up in the early morning and vanishing by nine or ten o'clock in the forenoon. They occur more often in the fall and winter months, but come so seldom and are so light that their effect upon the atmospheric moisture is insignificant. From July, 1885, to July, 1886, there were 280 absolutely clear days, 38 days of rain, in many of which there was simply a shower with a precipitation of one tenth of an inch or less, the balance of the time being clear, and 47 in which there was a longer or shorter interval of trifling fog in the early morning.

"There is little apparent selection as to month or time in the month for rainfall, though the record shows February and March to have had the largest percentage for the six years given:

Rainfall in months.

MONTH.	1880 and 1881.	1881 and 1882.	1882 and 1883.	1883 and 1884.	1884 and 1885.	1885 and 1886.	Average
September	....	·10	....	....	....	....	·10
October	....	·40	·13	·97	·12	·02	·27
November	·20	·25	·29	....	·12	1·34	·36
December	2·26	·40	·20	2·25	2·56	·62	1·38
January	·48	1·70	·09	·84	·77	2·21	1·015
February	·25	1 40	·83	12·00	....	1·38	2·64
March	1·30	1·08	·89	6·26	·01	1·95	1·91
April	·74	·72	·26	1·67	2·15	1·43	1·16
May	·03	·08	·25	1·99	·24	....	·43
June	....	·18	....	·52	....	....	·10

Jan. 22, 1882, 8 inches snow. Aug. 22, 1884, 3 inches hail and rain.

Total rainfall.

Season of 1880 and 1881, 5·26.	Season of 1883 and 1884, 22·54.
Season of 1881 and 1882, 6·31.	Season of 1884 and 1885, 5·97.
Season of 1882 and 1883, 2·94.	Season of 1885 and 1886, 9·32.

"The effect of the water used in irrigation upon the atmosphere it is impossible now to determine. In rough numbers, the amount used daily throughout the entire length of the settlement is about 2,000 inches* of continuous flow.

"This 2,000 inches, while flowing into the settlement steadily all the year round, is diverted from day to day from one orchard to another, so that the relative humidity of the soil throughout the entire settlement is about the same, varying little the entire year.

"Third, as to purity: The great sources of atmospheric supply for this entire country is the broad area of the Pacific Ocean on one side and the great American desert on the other. In neither one of these sources are there any known beds of infection, and in its passage to Riverside from any point of the compass the air can not pass across any infected regions, malarial latitudes, marshy lands, or anything decaying or dead. Scientifically we can not speak as yet, for no tests have been made, but to the unscientific observer it is so pure as to call forth remark. It does not seem possible that there can be any elements of impurity in the air. The soil of these great plains has not been dampened deeper than a few feet from an age to which the memory of man runneth not back, and except the 'flowers that bloom in the spring,' and die in the spring as well, they have had no green thing upon their surface for the same period.

"The effects produced upon phthisical patients is wonderful. Many men and women in Riverside cheerfully give evidence of it from their own personal experience.

"The colony beginning some eleven years ago as a purely irrigation venture, readily attracted men of means who had sought California for their health, and who found in orange-culture and the various enterprises of a growing settlement an occupation at once

* An "inch" of water is the amount that will flow through an aperture one square inch in area, under a pressure of a column of water four inches high.

pleasant and profitable, and directly in the line of treatment. Many such are now living, as active, as well, and apparently as free from phthisical taint as if never affected."

SANTA BARBARA AND VENTURA COUNTIES.

The Riviera of the Pacific.

Santa Barbara and Ventura Counties are to America what the far-famed Riviera is to Europe. With their mountains and valleys, their delightful climate and varied products, their fishing and hunting, their mineral springs and warm surf-bathing, and their elegant hotels and comfortable homes, they contain almost everything that could be desired. The farmer and the artist, the fruit-grower and the silk-grower, the lover of wine and the pious devotee, the archæologist and the florist, can each have his wishes fully gratified in these two northern counties of Southern California. Santa Barbara formerly contained 5,450 square miles, or 3,491,000 acres; but in 1873 it was divided, and the southern third of the county became Ventura County.

VENTURA COUNTY lies north and west of Los Angeles County, and east of Santa Barbara County. It has about forty miles of sea-coast and two good wharves—San Buenaventura and Hueneme. The surface is a succession of valleys and mountains. The products are the same as those of Los Angeles County, with the addition of navy and lima beans, and canary-seed. Until this year it was not appreciated by the traveling public; but now that it is traversed by the Southern Pacific Railroad, its numerous objects of interest attract almost all tourists.

From one to two trains leave Los Angeles daily for Santa Barbara. The visitor who wishes to see Ventura and Santa Barbara Counties should purchase at the Southern Pacific ticket-office through tickets to Santa Barbara, price, $3.35,

and then get stop-over checks when desired. The road goes thirty miles directly north from Los Angeles to Newhall in Los Angeles County, and deflects to the west into the Santa Clara Valley, Ventura County. This valley is a rich, well-watered territory, about forty miles long, traversed by the Santa Clara River, which has its origin in the Soledad Cañon, and reaches the sea between San Buenaventura and Hueneme.

The railroad, on leaving Los Angeles County, passes through the immense San Francisco Ranch of Newhall Brothers. On this ranch, for miles, are beautiful meadows, fat cattle, and large wheat-fields. Next, the noted Camulos Ranch is traversed, and every person on the car is craning his neck to get a peep at the home of Ramona, but all he can see are the orange-groves, vineyards, and olive-orchards, for the historic house is so hidden by foliage that it can scarcely be seen from the car-window. All the improvements of the Del Valle homestead are on the south side of the railroad. On the traveler goes, past good, bad, and indifferent places. The keen eye will now and then see away up toward the hills a bee-ranch, the white bee-hives resembling, at a distance, a flock of sheep.

Soon the Sespe Creek is reached. Here, March 23, 1877, the terrible tragedy known as the More murder occurred. A bitter feud had arisen between Thomas W. More, a wealthy landowner, and a number of the settlers. On this night they set fire to his barn, and as he ran out he was riddled with bullets. A meeting of the Sespe settlers was convened the following evening at the residence of F. A. Sprague, who was afterward proved to be the chief conspirator. Sprague acted as secretary of the meeting, and presented resolutions "deploring with deepest regret the awful tragedy." Sprague and six others were afterward arrested, tried, found guilty, and Sprague sentenced to death.

Owing to one of the witnesses for the State retracting his testimony, the Governor commuted the sentence to imprisonment for life, and Governor George Stoneman pardoned him nine years later, and, at the date of writing, he is with a married daughter near the Matilija Springs.

W. E. Shepard, now a prominent lawyer of San Buenaventura, was then editor of the Ventura "Signal," and, like a true newspaper man, went to the scene of the assassination the following morning. From footprints and surrounding evidence he formulated and published a theory so much like what proved to be the true history of the case, that an envious local editor suggested that he must have been in the conspiracy, and to his great consternation, exchanges began to come in with accounts of the new-found accessory to the murder. Such is the reward of enterprise.

It is said that not one of the conspirators, nor any member of their families, has prospered since that date; that they have all left the Santa Clara Valley, and are scattered in many directions.

SANTA PAULA is a prosperous town, and the traveler will always have a kindly feeling for it, because it is here the brakeman cries out: "Twenty-five minutes for lunch." A real good meal is served, and all are in a happy mood ready to learn of the resources of the place. This town is in the Santa Clara Valley, sixty-six miles from Los Angeles, and seventeen miles from San Buenaventura. There are several large oil-tanks here, and petroleum is shipped extensively, after being piped to this point from wells in the mountains. A good quality of brick is manufactured here. Corn, beans, and barley are extensively raised in this vicinity, but it is the fruit of which its residents are proudest. Apricots, oranges, and lemons reach perfection here. Olives, peaches, apples, and figs also do well. The beautiful orchards that the railroad passes through render argu-

ment unnecessary. There is abundant water. That used for drinking is piped from the Santa Paula Cañon. There are the usual churches and societies.

From Santa Paula on to Ventura is a rich, productive, highly-cultivated valley. The next station is Saticoy, and a few miles farther west is SAN BUENAVENTURA, the county seat of Ventura County. This is an old town. The point of greatest interest is the Mission Church. The San Buenaventura Mission was founded March 31, 1782. The church is yet in a good state of preservation. Its brick walls are six feet thick. The old olive and palm trees are also objects of interest, some of them being very large. An aqueduct, six miles long, built by the mission fathers, conveyed water from the Ventura River. There are nearly four thousand persons buried in the little lot west of the church.

In 1828 this mission owned thirty-seven thousand cattle, nineteen hundred horses, three hundred sheep, and four hundred working-oxen. It is well worth while to stop a day and visit this mission.

The town contains about three thousand inhabitants. The advent of the Southern Pacific Railroad has infused it with a new life. Large brick buildings are being erected, and there is every evidence of prosperity. An excellent wharf was built here in 1871. Colonel J. J. Ayers, then of the Ventura "Signal," but now of the Los Angeles "Daily Herald," was the orator of the day. The Ventura daily and weekly "Free Press," the "Weekly Signal," and the "Weekly Democrat" are the three papers. There are the usual churches and secret societies.

This is a great center for the oil-business, and there are three refineries. A visitor was recently being escorted through one of these refineries when he innocently asked the manager as to the quality of the oil. The answer was: "The very best, the very best, sir! 150° fire-test. If you don't believe it look on the head of the barrel." Sure

enough the proof was there; "150°" was stamped on the head of every barrel.

During the year ending March 31, 1880, there was shipped by sea from San Buenaventura 1,400,000 pounds of wheat, 4,000,000 pounds of corn, 900,000 pounds of barley, 1,100,000 pounds of beans, 35,000 pounds of canary-seed, 87,000 pounds of flax-seed, 56,000 pounds of potatoes, 47,000 pounds of flour, 100,000 pounds of soap-rock, 400,000 pounds of wool, 29,000 pounds of seaweed (used in soups by the Chinese), 11,000 pounds of butter, 37,000 pounds of honey, 35,000 pounds of hides, 405 barrels of asphaltum, 1,700 barrels of petroleum, 12,600 hogs, 2,000 boxes of eggs, and 165 coops of fowls.

During the year ending March 31, 1887, there were the following exports from this port:

Hogs	4,973	Sheep	1,173
Sheep-pelts, packages	150	Oil, barrels	31,670
Potatoes, sacks	1,806	Hides, packages	696
Wheat, sacks	16,384	Wool, bales	403
Barley, sacks	30,461	Citrus fruits, cases	2,528
Corn, sacks	35,060	Dried fruits, packages	634
Beans, sacks	113,703	Eggs, cases	613
English walnuts, packages.	1,171	Asphaltum, packages	1,369
Butter, boxes	27	Mustard-seed, sacks	115
Fowls, coops	28	Flax-seed, sacks	7,150
Honey, cases	6,830	Canary-seed, sacks	1,638
Tallow, packages	38	Flour, sacks	616

From these statements an excellent idea can be gained of the varied products tributary to this harbor. Since that date the fruit interests have steadily increased, and to-day form a large proportion of Ventura County's exports.

Ventura County is rich in rivers and creeks, and the town of San Buenaventura has an excellent water-supply. The water is brought several miles from the Ventura River.

A street-railway is being constructed, two very large

hotels are building, and everything indicates that San Buenaventura has thrown off its Rip Van Winkle lethargy. There is a well-selected public library. This library is quite large, and if some one of the numerous wealthy men who have made their fortunes in Ventura County would endow it with fifty dollars a month, in order to have it well cared for, its field of usefulness would be greatly extended.

This town has excellent public schools. In coming down the rich Santa Clara Valley, however, the tourist will see a number of school-houses that are, with their surroundings, a disgrace to civilization.

As a rule the public schools and school-houses of Southern California are above the average in the Middle States, but, aside from the school-house at Santa Paula, there is not a respectable school-building to be seen between Newhall and San Buenaventura.

Besides her excellent public schools, San Buenaventura is now moving to have a branch preparatory school of the University of Southern California. The arrangements have just been completed, and a twenty-five thousand-dollar building is to be erected on the Southern Pacific Railroad, four miles east of the town. San Buenaventura has the typical coast-climate of Southern California. It is healthful and invigorating. Drs. Bard, Curran, Patten, and Hill—the resident physicians—report numerous recoveries from lung-diseases in people who have come to Ventura from the East.

Twelve miles south of San Buenaventura is HUENEME, where there are extensive wharves and the largest warehouses on the California coast south of San Francisco. The wharves were built by Hon. Thomas R. Bard in 1870. Hueneme has a natural harbor, and will doubtless eventually prove a place of considerable importance. The wharf has paid a good interest on the investment from the start.

The following is a statement of the exports for the year ending March 31, 1887 :

Barley, sacks	394,024	English walnuts, sacks	81
Eggs, cases	427	Sheep	7,650
Hides, bundles	276	Beans, sacks	1,286
Hay, bales	139	Corn, sacks	23,426
Tallow, barrels	44	Wheat, sacks	80,174
Butter, cases	40	Wool, bales	1,352
Potatoes, sacks	2,880	Mustard-seed, sacks	1,004
Honey, cases	2,083	Hogs	7,005

Just back of Hueneme is a rich territory of several hundred thousand acres, a great portion of which is virgin soil, never having been utilized for anything but grazing-purposes. One of the largest of these ranches is the Simi Ranch of ninety-eight thousand acres, that has recently been purchased by a syndicate, and will soon be subdivided and placed upon the market. It is the subdivision of the great ranches of Southern California that will eventually make it rich and densely populated.

A railroad company has recently been organized at Los Angeles to build a road from that point to Hueneme. It is generally understood that this road is the work of the Santa Fé Company, and is the beginning of a coast-road to eventually extend from Los Angeles to San Francisco.

The Southern Pacific Company are about to build a branch line from San Buenaventura to Hueneme, which will make each of these places the important commercial centers.

Nordhoff—The Ojai Valley.

Every reader of this work has probably heard of the Ojai Valley, which contains the town of Nordhoff, and visitors of San Buenaventura should all take a trip to this noted resort. Nordhoff is fifteen miles north of San Buenaventura. The Ojai Valley House and the Oak Glen Cottage

stages meet all trains. The stage-fare each way is one dollar.

For the first few miles the road passes through the suburbs of San Buenaventura, and the orange-groves, vineyards, walnut-groves, olive and apricot orchards that surround the cosy homes of the town are a delight to the eye ; but soon the scenery is more picturesque. The stage skirts the edges of the Ventura River, and now and then the horses plunge through its clear, rapid-flowing waters. On either side are gigantic hills and broad, rolling plains, dotted—in fact, almost covered—with the large, umbrageous live-oak, whose perennial foliage furnishes the innumerable horses and cattle, that feed upon the wild clover, protection from the sun in August and shelter from the rain in winter. This whole ride is delightful, the only drawback being the dust which, in August and September, after five or six months without a drop of rain, is annoying. Even in these months no person will regret the ride. There is wilder and more rugged scenery in Southern California, but there is nothing more artistically beautiful.

All too soon the drive is over. A higher elevation has been reached, and between the sturdy oaks are glimpses of farms and white cottages, lawns, and fields of swaying golden grain ripe for the reaper. This is the Ojai Valley, and here is Nordhoff, its town and post-office, named for the author, Charles Nordhoff, whose writings have been read in almost every intelligent household in the United States. This valley contains seventeen thousand seven hundred and ninety-two acres, and is divided into two parts : the Lower Ojai, in which Nordhoff is situated, and which has an altitude of from eight hundred to a thousand feet ; and the Upper Ojai, which has an altitude of from eleven hundred to thirteen hundred feet.

The Upper Ojai is noted for its orchards, while the Lower Ojai is particularly noted—agriculturally—for its

fields of beans and grain, but it is not for these that the Ojai Valley is most noted. Its great reputation has been derived from the curative value of its climate in cases of consumption and asthma.

Ojai is said to mean "a nest," and this little valley is indeed a nest in the mountains. It is literally surrounded, with the exception of the pass for the stage-roads, by the San Rafael and Santa Ynez Mountains. It is a mountain-pocket. These mountains shelter it from harsh winds and protect it almost entirely from the fogs that come in from the sea.

From the Ojai Valley House can be pointed numerous farms, and in each instance the family owning the farm came here for the benefit of an asthmatic. In the Ojai Valley these asthmatics live comfortable lives.

In September, 1887, eating a hearty meal at the Ojai Valley House table was a man by the name of Sacket, from Brooklyn, New York. For seventeen years he had been the usher in the right-hand gallery in Plymouth Church, but his health broke, his lungs became diseased, and hæmorrhages brought him to the verge of the grave. As a *dernier* resort he came six months before to the Ojai Valley House, but his cough was so incessant that it disturbed the other boarders at night, and a tent several hundred yards away was provided for him. His cough soon ceased, he gained rapidly in strength, and at the date mentioned he was working twelve hours daily on a neat little cottage of his own.

There are over one hundred school-children in this valley, yet during the last fifteen years there have been but four deaths among children, and two of those were accidental.

Fruits of almost every kind can be raised in this valley. There are pleasant drives, interesting mountain-walks, horses that will safely carry the venturesome to the top of

the mountains, and croquet and lawn-tennis grounds under the oak-trees, where the hours can be whiled away.

Three miles away are the Matilija Hot Springs. There is the "creek road" and the "upper road" from San Buenaventura to Nordhoff, and the tourist can go one way and return by the other.

In and near this valley are large bodies of excellent land that the point of the plowshare has never pierced. Arrangements are about completed to build a railroad to Nordhoff, and then these rich acres will be subdivided into small farms.

Santa Barbara—America's Mentone.

Having returned from Nordhoff, the tourist will doubtless take the train on the Southern Pacific road for Santa Barbara, thirty miles westward. Again will he refer to his map in order to comprehend what he sees. The hills and mountains hug the sea so closely that the railroad is obliged to run almost upon the ocean two thirds of the distance.

A more interesting ride by rail could not be conceived. For thirty miles the ocean is ever in sight. At times, on looking from one side of the car, nothing can be seen but the deep-blue sea, and it takes but a slight stretch of imagination for the traveler to believe that he is out on the ocean sailing. The ocean-surf can be heard beating under the train as though it were against the sides of a ship, and now and then a white-winged schooner flits across the watery vista. The cool saline breeze fans the forehead, and, without the nausea of a sea-voyage, the tourist has all of its pleasures.

Ten miles from Santa Barbara and twenty miles from San Buenaventura the railroad passes through the western edge of the Carpinteria Valley. This is a body of rich land about ten miles square.

Carpinteria is a collection of homes and farms where

the Lima bean and the English walnut are the chief sources of wealth, although various kinds of fruits are raised.

Now SANTA BARBARA, the renowned Mentone of America, is reached. Well does it deserve to be so called. Really, though, it is superior to Mentone as a health-resort for Americans.* It has all the climatic attributes of Mentone—it has the elegant hotels, delightful surf-bathing, pleasant drives, and, besides all these, it has a refined, educated, hospitable American social life.

The Santa Barbara Mission is the one point that above all every tourist wishes to see. This mission was founded December 4, 1786, and was the eleventh one founded in the State of California. It is a very large tile-covered building in an excellent state of preservation. It is situated in the northern part of the city, and its belfry can be seen from the Arlington Hotel.

The founders of this mission were men of wonderful prescience. They built a stone aqueduct several miles long to supply their mission with water, and this same water-

* "The only instance of the simoom on this coast, mentioned either in its history or traditions, was that occurring at Santa Barbara on Friday, the 17th of June, 1859. The temperature during the morning was between 75° and 80°, and gradually and regularly increased until about 1 o'clock P. M., when a blast of hot air from the northwest swept suddenly over the town, and struck the inhabitants with terror. It was quickly followed by others. At two o'clock the thermometer exposed to the air rose to 133°, and continued at or near that point for nearly three hours, while the burning wind raised dense clouds of impalpable dust. No human being could withstand the heat. All betook themselves to their dwellings, and carefully closed every door and window. The thick adobe walls would have required days to have become warmed, and were consequently an admirable protection. Calves, rabbits, birds, etc., were killed, trees were blighted, fruit was blasted and fell to the ground, burned only on one side; the gardens were ruined. At five o'clock the thermometer fell to 122°, and at seven it stood at 77°. A fisherman in the channel in an open boat came back with his arms badly blistered."

system is the one that now supplies the city of Santa Barbara. Other means of getting water are at hand, but with its present population of 7,000 no greater water-supply is needed.

In 1812 the mission fed 1,300 people and had 4,000 head of cattle, 8,000 sheep, 250 swine, 1,322 horses, and 142 mules, and its productions for that year were 3,852 bushels of wheat, 400 bushels of corn, 126 bushels of barley, and 26 bushels of beans. In 1828 it possessed 40,000 head of cattle, 3,000 horses, 20,000 sheep, and 160 working-oxen.

Mrs. Jackson's description of this mission is interesting reading. The rich-toned bells were imported from Spain over one hundred years ago.

After visiting the mission the tourist should go a few steps away to the reservoir and aqueduct, and see how well the holy fathers planned for the future.

In 1850 the first roster of county officers was elected. Edward L. Hoar, a brother of United States Senator Hoar, of Massachusetts, was the first district attorney, but was the next year elected county assessor.

In the year 1851 Santa Barbara had become a place of considerable importance, and the city council entered into an agreement with Capt. Salisbury Haley, a civil engineer at Los Angeles, to lay out the city in uniform blocks 150 yards square, all streets with the exception of two to be 60 feet wide. State and Carrillo Streets to be 80 feet wide. The survey was accepted, and Captain Haley was paid $2,000 by the council. After years of litigation, this survey received a final legal confirmation.

January 24, 1869, the Santa Barbara "Press," which is now also a daily, was established as a weekly. September 23 of that year Hon. William H. Seward visited Santa Barbara and made a felicitous speech.

In 1876 Santa Barbara celebrated the Centennial with great enthusiasm. Col. N. A. Covarrubias, now of Los An-

geles, was president of the day. Rev. Stephen Bowers, D. D., the noted scientist and editor, now of Ventura, was orator of the day, and Col. H. G. Otis, now of the Los Angeles "Daily Times," commanded the military division of the procession.

The Princess Louise and the Marquis of Lorne spent a part of one season here, and were profuse in their praises of Santa Barbara's climate, products, and society. Santa Barbara prides herself on being more æsthetic and cultured than her somewhat plebeian sisters, San Diego and Los Angeles, and the impress of royalty that the Princess Louise gave the city had a very expansive and exhilarating effect. Santa Barbara's citizens are noted for their politeness. A curious, idle tourist watched two of the city's leading professional men for one day, and in that time they met on the street and elsewhere twenty times, and each time raised their hats and shook hands with each other. Such virtue carries its own reward.

After visiting the mission the tourist should visit the home of Mr. Dibblee, on the point above the city. This is without exception the grandest residence in Southern California, and commands a complete view of the city and harbor.

Santa Barbara takes great pride in her public library, and gives each year a rose carnival or fair for its benefit. Mrs. E. A. Otis, in closing a description of this festival in 1887 for the Los Angeles "Daily Times," says: "This fair has been a rare success. It will close this evening, and add one more to the floral triumphs of Southern California, where—

> 'Winds are hushed nor dare to breathe aloud,
> Where skies seem never to have borne a cloud.'"

Santa Barbara has several banks and three daily newspapers—"Press," "Independent," and "Herald." It has numerous churches and secret societies. There are fruit-

canneries, brick-yards, and other manufacturing establishments on a smaller scale.

In this work allusions in detail to hotels have been very infrequent, but the Arlington of Santa Barbara must be mentioned. It was built in 1875 by a joint-stock company, at a cost of $170,000. After the climate the Arlington has done more than any other agency toward giving Santa Barbara its favorable reputation as a health-resort. The people of Santa Barbara should look with great pride and gratitude on this hotel and its beautiful grounds. The writer of these lines has always paid full rates when he stopped at this hostelry, but there was a satisfaction in it. The hotel is well furnished and well managed. Santa Barbara has a south frontage on the ocean and slopes gently to the foot-hills back of the town. It is brilliantly lighted by electricity, and has a good system of street-cars. Its principal business is done on State Street. The following table of monthly mean temperature of the sea-water is conclusive proof of the advantages of Santa Barbara for surf-bathing:

Comparative temperature of sea-water.

MONTH.	Santa Barbara, Cal.	Santa Cruz, Cal.	Newport, R. I.	MONTH.	Santa Barbara, Cal.	Santa Cruz, Cal.	Newport, R. I.
January ...	60°	52°	32°	August	65°	60°	70°
February...	61	58	22	September.	66	60	65
March	61	52	34	October....	63	56	58
April.....	61	57	43	November..	61	55	44
May.....	61	57	52	December..	60	53	36
June	62	58	62				
July.....	64	60	66	Mean....	62	56	46

MONTECITO, three miles away, should be next visited. Rev. E. P. Roe, the noted author, speaks of Montecito as "a villa region of blossoming gardens and green lawns." Mr. Roe visited Montecito January 1st, and says:

"The orange-trees were each laden with from one to two thousand golden-hued oranges, in addition to the green ones not to be

distinguished from the leaves in the distance. Even so early in the season there were sufficient number of blossoms to fill the air with fragrance, the brook babbled with a summer-like sound, and the illusion of summer was increased by the song of birds, the flutter of butterflies, and the warm sunshine, rendering vivid the gold and glossy green of the groves. Rising near and reflecting down the needed heat were the rocky and precipitous slopes of the Santa Ynez Mountains. Turning on one's heel, the silver sheen of the Pacific Ocean, gemmed with islands, stretched away as far as the eye could reach. Could this be January?"

Santa Barbara Grape-vine.

This is to Santa Barbara as Pasadena is to Los Angeles. There are homes here that would be an ornament to the suburbs of any city.

It was at Montecito that the big grape-vine grew that was cut down and taken to the Centennial at Philadelphia. This vine's trunk was eighteen inches in diameter, and its foliage covered an area equal to 10,000 square feet. It has produced in one year 12,000 pounds of grapes. There is now another vine growing here that bids fair to equal the parent vine.

Another trip to be taken is a day's picnic drive to the Hollister and Cooper places, twelve miles west of Santa Barbara.

The farm of the late Colonel Hollister consists of 4,800 acres. There are 10,000 almond-trees, making it the largest almond-orchard in the world. There are also 1,200 orange, 500 lemon, 500 lime, and 1,000 olive trees. There are also 4,000 English-walnut trees, and 200 Japanese persimmon (a rich, luscious fruit) trees. In 1872 Colonel Hollister sent to Japan for twenty-five bushels of seed of the tea-plant, and at the same time imported two Japanese tea-growers. He raised 50,000 plants about eight inches high, but they failed to reach perfection. The date-palm groves form an elegant shade for picnic grounds.

Adjoining Colonel Hollister's place is the noted ranch of Ellwood Cooper, consisting of over 2,000 acres. Mr. Cooper was the first to introduce the eucalyptus into Southern California, and he is said to have 200,000 of these trees, including over fifty varieties, on his place. Mr. Cooper is most noted as an enthusiastic olive-grower and manufacturer of olive-oil. He began planting olives in 1873. The olive-tree flowers in June, and its fruit ripens in January. Twenty gallons of berries give three gallons of first-class oil. Mr. Cooper also has large orchards of citrus and deciduous fruits.

On these two great fruit-farms irrigation has proved to be the great factor. It is a curious fact that in the occa-

Irrigating an Orange Orchard.

sional years of drought in Southern California the mountain streams that supply the water for irrigating have not failed.

The climate of Santa Barbara is admirably delineated in the following paper by Dr. C. B. Bates,* a practitioner of that city :

"My object in this paper is to give a few facts with regard to the climate of Santa Barbara, and also to the therapeutic benefits to be expected from a residence in such a climate, benefits which, in my experience during a continuous practice of seventeen years in that place, have been realized in many instances. The following remarks apply only to that portion of Santa Barbara County about sixty miles in length, from one to five in width, lying between the Pacific Ocean and the Santa Ynez Mountains and extending from Point Conception southward to Point Rincon. The city itself, forty miles south of Point Conception, is situated on a gentle incline running from the ocean back to the foot-hills to an elevation of about three hundred and fifty feet. Its aspect is decidedly southeastern owing to an abrupt change in the direction of the coast-line. In the latitude of the Mediterranean, shut in on the land side by the Santa Ynez Mountains, some of which are three to four thousand feet high, sheltering it from the northwest winds which prevail on the Pacific coast during the greater portion of the year, protected seaward from the southeast winds by the Channel Islands twenty-five miles away, with the summer's heat and winter's cold tempered by the ocean at its feet, how can it fail to have an equable and pleasant climate? Within the bounds allowed me in this article it is out of the question going into any elaborate analysis of temperature tables, nor is it necessary.

"It will suffice for all practical purposes to give a few striking figures. Records kept during a period of thirteen years show average for January 53·25°, for July 68·45°, and for the entire year 61·43°. Averaging the days upon which the temperature exceeds 82° we find but fifteen for each year and but eight for the same period upon which it falls below 42°. Although so near the ocean, Santa Barbara has for a coast town a remarkably dry atmosphere. The yearly mean of humidity is 69½°, while a few hundred miles north of us and in cities on the Atlantic coast, 80° and even more are reached. Indeed, the dryness and purity of the air are shown

* "Southern California Practitioner," January, 1887.

by a custom of the natives who preserve their beef by 'jerking,' hanging long strips of meat in the open air till dry enough to keep for future use. This is done even in midwinter and frequently within a few hundred yards of the ocean. The average yearly rainfall for fifteen years was 17·31 inches, hardly more than would fall on the Atlantic coast during the showers of a summer. The rainy season extends from November to May; the remainder of the year is practically rainless. During the winter months, at intervals of three or four weeks, the rain falls in heavy showers, lasting perhaps a few days; then comes bright sunshine with charming weather till the next storm. Owing to the porous character of the soil, decomposed sandstone, clay and alluvial, we are not annoyed with mud; walking is pleasant within a few hours after the storm has ceased.

"From the foregoing data it is evident we can truthfully claim for the climate of Santa Barbara a remarkable equability, and it is this freedom from sudden changes which constitutes its chief charm, and in which lies its great therapeutic power. The invalid, delicate as he may be, can pass the greater portion of each day, during the entire year, in the open air. One gentleman, a consumptive, kept a record of the weather, and found that in one year there were three hundred and ten days in which he could be out-of-doors from five or six hours or more with safety and comfort, and but fifteen upon which he was unable to leave the house; ten of these were rainy and five were windy. It is true our climate is not perfect. What climate is? We have at time wind-storms lasting two or three days and bringing clouds of dust; but these are exceptional, seldom more than two or three each year. Then, also, during the spring and fall more or less fog prevails, obscuring the sun and depressing the spirits of the invalid. Nine tenths of this, however, would in the East be called low clouds, not fog; it is high and dry, and to many is a pleasant change from the 'eternal sunshine.' As a rule the fogs are not very frequent, and coming late in the evening are usually dissipated long before noon on the following day. The natural incline upon which the town is built, the porous character of the soil, and the system of sewerage recently introduced, insure good drainage, while the water-supply brought from the neighboring mountains is excellent. There is no malaria nor any endemic disease. From the foregoing remarks the therapeutic advantages of Santa Barbara can easily be deduced. The equability of the

temperature is the great therapeutic agency, local congestions caused by the blood flowing inward from a chilled surface are avoided. In phthisis this freedom from sudden change tends to decrease hæmorrhage, to lessen also the local pulmonary inflammation. The open-air life possible to the invalid in such a climate only, is also of the greatest benefit. Indeed, during my residence in this place I can recall but one instance of the arrest of pulmonary phthisis in which the chief means of cure was not this out-door life. In a marked case a lady patient of mine lived in her garden, protected merely by a brush shelter, for eighteen months. Day and night for the entire period, excepting only nine nights, she remained in the open-air. Afterward, while camping out on one of the Channel Islands, she was four months without the slightest protection. In disease of the heart, the even temperature giving a regular quiet circulation of the blood is very beneficial; the same is true in kidney-affections where a sudden chill will frequently cause a rapid and fatal advance of the disease. In nervous prostration or neurasthenia, in disease of the brain, no better place could be desired. The quiet, peaceful surroundings, the charming scenery, the pleasant drives, the out-door amusements, the fresh, pure, bracing air, bringing sleep and appetite, are all to be found in Santa Barbara.

"For children and the aged the place is a Paradise, no heat diseases which carry off the little ones so ruthlessly in the Eastern summer, no cholera-infantum nor membranous croup, while those advanced in years, sheltered from the cold and cutting winds of winter, with but few calls upon their lessened vitality, live on year after year in happiness and comfort. As for asthma, no one climate suits all cases, nor I think, even the majority. All I can say is that many have tried this place with success; others, unable to live in the town, find immunity from the attack at various elevations on the neighboring foot-hills; some have left us disappointed and unimproved. I must not omit to mention our hot sulphur springs, useful in a variety of affections, nor the delightful sea-bathing, pleasant on almost any day in the year, for the rate of temperature of the water never falls below 60°, but ranges from that degree to 65°, with a yearly mean of 62°.

"And now, in conclusion, a few words of caution. In Santa Barbara, as throughout California, the nights are always cool, even in the interior; no matter how sultry the day, the night is never

oppressive; one sleeps comfortably under a blanket. This is of immense advantage, and yet it has its drawback. Just before sunset the temperature rapidly falls and the invalid at this time should remain in the house, or, if out-of-doors and not briskly exercising, should put on an overcoat. Indeed, although the climate of Santa Barbara is warm, it is not hot; flannels next the skin, with moderately warm clothing, can and should be worn throughout the year. On the other hand, our climate from its pleasant equability approaches the subtropical, and my experience convinces me that the diet of a subtropical climate is suitable to this. Vegetables, fruits, hydrocarbons with comparatively little nitrogenous food or stimulants. Meat once a day is ample. Those of our visitors who bring with them the habits of their former home, eating three hearty meals a day, with perhaps meat at each and more or less wine or liquor, soon pay the penalty in a deranged liver, impaired appetite, and weakened digestion."

North of Santa Barbara and running from west to east across the county are the Santa Ynez Mountains—a great wall from three to four thousand feet high, with many wooded, watered cañons and romantic glens. The only gateway through this wall, from the mouth of the Ventura River to Point Conception, is the Gaviota Pass, a great chasm in the mountains, thirty-six miles west of Santa Barbara. At this is the Gaviota wharf, one thousand feet long, from which a great amount of grain is shipped. Three and a half miles from the wharf is the village of Las Cruces, and three fourths of a mile away are the Las Cruces hot sulphur springs. Five miles northeast are the No-jo-qui (*No-hoe-quee*) Falls, where a beautiful stream takes a leap of a hundred feet. North of these mountains, and between this range and the San Rafael Mountains, is the Santa Ynez Valley, watered by the Santa Ynez River. The principal town in this valley is Lompoc—meaning "little lake"—nine miles from the coast. This is the center of a rich temperance colony. It was founded in 1874 by a colony of two hundred and

fifty men, women, and children. The chief desire of the residents is to have a home free from the influence of the liquor traffic. The town contains six churches, numerous stores, school-houses, and the usual number of secret societies. In its early history a druggist was found selling whisky. The women of the place appeared upon the scene in battle array, and knocked in the head of his whisky-barrel with an axe. A few years later a saloon was started, and on May 20, 1881, at 11.15 P. M. a terrible explosion was heard. The people rushed out of their houses, and found the saloon a total wreck. The Lompoc "Record" the following day said: "Whether it was done by an earthquake or by a Nihilist from Russia it is impossible to say, as no inquest has been held. . . . The general impression prevails that this is not a healthy place for saloons."

Artesian wells furnish water in abundance. The soil is very rich, thirty-seven hundred pounds of Lima beans having been raised on one acre. Near Lompoc are the ruins of Mission La Purissima Concepcion, founded, 1787.

North of the Santa Ynez Valley is the Los Alamos Valley, twenty-five miles long, and from one to two miles wide, watered by a stream of the same name. This valley contains the town of Los Alamos, which is five hundred feet above the level of the sea, seventeen miles from Lompoc, and sixty-four miles from Santa Barbara. It is the terminus of the narrow-gauge road that goes north to Port Harford in San Luis Obispo County.

The great Santa Maria Valley forms the most northern part of Santa Barbara County. It is said to contain two hundred thousand acres of tillable land, and is twelve miles wide and twenty-five miles long. This valley contains two towns, Guadaloupe and Santa Maria, formerly called Central City. Guadaloupe is in the northwest corner of Santa Barbara County, seven miles from the coast, one and a half miles from the northern boundary line of the county, and

ninety-five miles from Santa Barbara. It contains about six hundred inhabitants and the usual number of churches, stores, and secret societies.

Santa Maria is a few miles east of Guadaloupe, on the narrow-gauge railroad. Over a half-million grain-bags are sold here annually. It is the center of a rich community of farmers.

Along the Coast.

The "Coast Pilot" of California, by George Davidson, of the United States Coast Survey, says: "Point Conception is a characteristic and remarkable headland, about two hundred and twenty feet in height, lying at the western entrance to Santa Barbara Channel. Once seen it will never be forgotten. When made from the northward or from the eastward it rises as an island; but upon approach is found to be a high promontory, stretching boldly into the ocean and terminating abruptly. The land behind it sinks comparatively low, and at first gradually, but soon rapidly rises to the mountains, which attain an elevation of about two thousand five hundred feet. . . . The light-house is upon the extremity of the cape, and upon the highest part which is about two hundred and twenty feet above the sea, and covered with grass and bushes like the land behind. A fog-bell, weighing three thousand one hundred and thirty-six pounds, is placed on the edge of the bluff. Next to the islands of Santa Barbara Channel, Point Conception is the most prominent and interesting feature between San Francisco and the peninsula of Lower California. . . . Point Conception was discovered by Cabrillo in 1542, and called Cape Galera. . . . The larger mass of the great Japan warm stream that reaches the American coast about latitude fifty degrees, sweeps southward along the shores with an average breadth of three or four hundred miles, and a rate of about sixteen miles per day. . . . On March

24, 1815, the brig Forester, of London, . . . only three hundred and fifty miles southwest by west from Point Conception, rescued three dying men (the captain and two sailors) on a Japanese junk that had drifted for seventeen months across the Pacific. . . . Two miles east of Point Conception is the anchorage of El Coxo. This anchorage is better than at Santa Barbara, and the kelp is not so compact. . . . The first headland to the northward of Point Conception is Point Arguello, distance twelve miles." The steamship Yankee Blade struck some rocks near here October 1, 1854, and four hundred and fifteen person perished. Three miles from here, on the Espado Ranch, are some hot sulphur springs. Eight miles north of Point Arguello the Santa Ynez River empties into the sea.

A short distance north is Point Purissima, where the Lompoc wharf is located.

Nineteen miles north of Point Arguello is Point Sal, at the extremity of a prominent cape. There is an important wharf here.

Partially sheltered by Point Sal is the "chute landing," of which the following is a description:

"From the road which encircles the face of the cliff there is built out a wharf, about one hundred and fifty feet long, which projects over the sea forty feet, at an elevation above the surface of the water of about eighty feet. At the outer extremity of this wharf a framework is erected, in which a slide, which works vertically, is placed. From a firm anchorage in the rocks of the cliff a wire cable, about three fourths of an inch in diameter, stretches over this slide, and about six hundred feet out to sea, to a buoy firmly anchored on the bottom. The slide on the frame serves to elevate or lower the cable. Upon this cable is suspended permanently a traveler, which works easily back and forth upon it by means of nicely adjusted shieves. To this traveler is suspended cages of various sorts, depending upon the nature of the material to be transported. An engine upon the wharf furnishes all needed motive power. The method of operation is as follows: The slide in

the framework being lowered and the cable being coiled away on the wharf, a schooner approaches seeking to be unloaded. She passes inside the cable-buoy, laying with side to the wharf. From her, cables are run out in four directions to buoys and fastenings in the rocks, and the vessel firmly secured. The end of the wire-cable is taken on a row-boat and carried out to and over the schooner and to a buoy beyond, where it is securely made fast. The engine now starts up and raises the slide, which, carrying up the cable, takes up all undesirable slack. The traveler and a cage or cages is run down to the ship, loaded, and at once hauled back by means of a rope attached to it and to the drum of the engine. When it is drawn up a few feet above the end of the wharf, the load is deposited on a tramway-car, which a horse hauls to the mainland, where the car is unloaded, and whence it goes back for another load. The process is simply reversed in loading vessels. A ton may be carried at one time by the traveler, and altogether the apparatus has proved a great success.

"The first grain received for shipment was on July 21, 1880, and the first vessel shipped was the schooner Golden Fleece, on the 28th of the following September. Thirteen thousand tons of grain were shipped the first two years, 8,000 of which was in 1881. One million feet of lumber is received annually. There is storage capacity for 100,000 sacks of grain."

The Pacific Coast Steamship Company's vessels make tri-weekly trips between all Southern California ports. The Santa Rosa is the largest and most popular of the company's steamers.

The Islands of Southern California.

The reader will observe on the map of California a number of islands along the coast of Los Angeles, Ventura, and Santa Barbara Counties. These islands and their climatic bearing have been referred to in Part I of this work, and they will now be described in detail.

SAN CLEMENTE.—Going north, the first island (see map) is San Clemente, about fifty miles southwest of San Pedro

Bay.* It is twenty and a half miles long, and has an average width of two and a half miles. Like all of these islands, it is high and bold, the southern end being the higher. There are several anchorages about the island. The indentation on the southeast end of the island is called Smuggler's Cove.

Messrs. Oscar Macy, L. C. Goodwin, and S. C. Hubbel, of Los Angeles, have a band of sheep on San Clemente. Twice a year they send over shearers. Between these sheep-shearing times there is but one man on the island, and he has been there in charge of the sheep nearly twenty years. Annually he comes to Los Angeles and draws his year's salary; he then lives like a titled debauchee for a week, and goes back to his solitary island life without a dollar. This island is quite barren, and the sheep get a precarious existence. It was discovered by Cabrillo in 1542, and named San Salvador, after one of his vessels. The present name was given by Vizcaino in 1602.

SANTA CATALINA (*Cat-aye-lee-nah*).—Twenty miles north of San Clemente is Santa Catalina Island, twenty-three miles long, with an average breadth of four miles in the southern part, and two miles to the northern. It rises to a height of three thousand feet, and is remarkable for the great transverse break or depression, five miles from the northern end, running partly through it, and forming a cove or anchorage on each side. The land connecting these is very low, say not over thirty feet; but the hills rise up on each side two or three thousand feet, and when sighted from the north or south, the whole appears like two very high islands.

The harbor on the southern side is eighteen and a half miles from San Pedro. There is also a safe anchorage and harbor on the northern side. There are several other fair harbors on the coast opposite the mainland. There are a

* The topographical statements are from the "Coast Pilot" of California.

Solitude Cañon, Catalina Island.

number of pretty elevated valleys, several mineral springs, and wells of good water.

Dr. T. J. McCarty, Professor of Chemistry in the Medical College of the University of Southern California, says:* "I procured samples of water from a half-dozen springs, and below appears the analysis of water from one more highly charged with saline matters than any of the others examined. The spring is found at an elevation of several hundred feet, and contains—

In one pint:	Grains.
Sodium chloride	79·5
Magnesium chloride	21·0
Magnesium sulphate	32·5
Sodium sulphate	20·5
Calcium sulphate	6·0
Magnesium carbonate	2·0
Iron and aluminium	Traces
Total solids	161·5

"This water would be classed among the purgative mineral waters, and as such will commend itself."

James Lick bought this island in 1864 of the United States Government for $12,000. In 1874 his heirs tried to sell it for $1,000,000, but failed. In 1887 George R. Shatto, of Los Angeles, bought it for $225,000. This island has always been a popular summer resort for Californians. Although there were no accommodations whatever, yet thousands of people went over and camped in order to enjoy the benefits of the climate and bathing, and the pleasures of fishing. There are many wild goats on the south side of the island, that give rare game for amateur Nimrods. The water along the northeast shore is remarkably warm, and people who get chilled on the mainland bathe here with

* "Mineral Springs of Catalina Island," "Southern California Practitioner" for November, 1887.

pleasure. Boating is a delightful pastime. The water is always calm, and so clear that fish, mosses, and pebbles can be distinctly seen many feet below the surface. The island has evidently at one time been densely populated, and numerous earthen pots, stone weapons, and bones are to be found in the mountains. Catalina is plainly visible from Los Angeles, forty miles away.

By the time this work is published there will be an excellent hotel here. Steamers make daily trips from Catalina to San Pedro, connecting with Los Angeles trains. It was discovered by Cabrillo in 1542, and named La Victoria, after one of his vessels. It received its present name from Vizcaino in December, 1602, when it was thickly settled by a people reported to be very ingenious, especially in pilfering. Father Ascencion, who accompanied this expedition, describes a temple to the sun, found near the two harbors, with images and idols.

Tourists will find a visit to this island novel, interesting, and pleasant. The round trip from Los Angeles, and twenty-four hours at the hotel, costs about five dollars.

SANTA BARBARA ISLAND.—Twenty-three miles northwest of Catalina is Santa Barbara Island. The extent of the island does not exceed two miles of shore-line ; its elevation at the highest part is about five hundred feet, and the top has an area of thirty acres covered with soil, but no water is found, and not a vestige of wood.

ISLAND OF SAN NICOLAS.—This island is most distant from the coast, and the driest and most sterile of all these islands. It is about six hundred feet high, eight miles long, three and a half miles wide, with twenty-two miles of shore-line. It is sixty-seven miles west of San Pedro.

ISLAND OF ANACAPA.—This is, in fact, a curiously-formed group of three islands, their entire length being five miles. The west end of Anacapa is a peak nine hundred and thirty feet high. This is separated from the

middle island by a gap ten feet wide, through which boats can pass.

The gap separating the middle island from the eastern islands is over two hundred yards wide, but is so full of rocks that it is impassable for boats. Anacapa is nine and a fourth miles from Hueneme and twenty-eight miles from Santa Barbara. There is not a drop of fresh water, but sheep and goats thrive on the dews that cover the island every night. It is a great resort for the seal, sea-lion, and formerly the otter, but the latter have been nearly all killed off. The sea-lions are killed for their oil. A full-grown male yields about eight gallons. It was on this island that the steamship Winfield Scott ran ashore during a dense fog at midnight, December 2, 1853, in calm weather.

ISLAND OF SANTA CRUZ.—This island is the largest of the channel group, and lies broad off the coast opposite Santa Barbara at a distance of twenty miles. It is twenty-one miles long and has an average width of four miles, while its shore-line is not less than fifty-three miles. The island is bold, and about one thousand seven hundred feet in height.

On the northern side of the island there is a roadstead called "Prisoner's Harbor," which is at the opening of a valley where wood and water can be obtained. Almost all kinds of grain and fruit are raised here. The owners of the island have about forty thousand sheep feeding in its valleys. Mrs. Otis, staff correspondent of the Los Angeles "Daily Times," in a recent letter to that journal, describes a visit to the Santa Cruz Island, from which the following extracts are taken :

. . . . . .

"It was seven o'clock when we went down to the pretty sail-boat, the Geneva, owned and handled by Captain Larco, the well-known Italian fisherman of Santa Barbara, a man large-hearted,

genial, kindly, who has had adventures enough to fill a volume of romance.

. . . . . .

"Soon after noon we came in sight of a school of whales, seven in all, two of which appeared to be making directly for our boat. Then commenced a lively pounding of oars and a drumming with whatever would make a noise upon the boat's bottom, and it was not long before these monsters of the deep disappeared from our view in another direction.

. . . . . .

"When within a short distance from the shore the sea grew comparatively still, and with well-filled sails we neared the protecting walls of the little harbor, near the center of the island of Santa Cruz. To this quiet harbor, with its unruffled waters, our captain had given the name of 'Lady Harbor,' 'because,' he said, 'it be so quiet and smooth.' The aptness can not fail to be apparent.

. . . . . .

"On the rocks great sea-lions lay; from the water scores of them lifted their heads on our approach. A shot from a rifle in the hands of one of our number, and they leaped from the rocks into the sea. Another shot, and the air was filled with their almost human cries, which echoed from every craggy height and were flung back to us from the stony cliffs.

. . . . . .

"As a pleasure-resort these islands are full of interest, and it is surprising to me that long ago provision was not made for regular trips to and from the islands for the accommodation of tourists and others at Santa Barbara."

ISLAND OF SANTA ROSA.—This is the middle island of the group off the coast of Point Conception and Santa Barbara. It is fifteen miles long and ten miles wide, with a shore-line of forty-two miles. There is a good passage for ships between Santa Cruz and Santa Rosa with a width of five miles, and one between it and San Miguel with a width of four miles. The outline of the island is bold. It is not so high as Santa Cruz, but attains an elevation of 1,172 feet.

J. Ross Browne, in the "Overland Monthly," says: "Numerous springs, having their source in the principal ridge, furnish a sufficient water-supply for stock or agricultural purposes. Many parts of the island are conspicuous for their picturesque beauty." The sale of wool from Santa Rosa in one year amounted to over $100,000. Attention has been attracted to this island lately by the report of a tragical murder of a Chinaman by Alexander More, the owner of the island.

ISLAND OF SAN MIGUEL.—This is the most western of the Santa Barbara Channel Islands. It is seven and a half miles long and two and a half miles wide. Cuyler Harbor is on the northeast side of the island. It is twenty-five miles from Point Conception. A sea-lion was killed here in July, 1879, that was fourteen feet long, and weighed thirty-five hundred pounds.

San Miguel was discovered by Juan Rodriguez Cabrillo in 1542. Most authorities say that Cabrillo, after visiting Santa Barbara and other points on the mainland, returned to San Miguel and died January 5, 1543, although the California "Coast Pilot" doubts the statement, and thinks it more probable that he died on the Santa Cruz Island, where he could obtain water, and oak wood for repairs. Be this as it may, no historian has yet expressed any doubt about his death.

Abalone shells are found on the rocks along all of these islands. They have to be pried off with a crowbar, and it is related of a Chinaman that he attempted to pull one off a rock with his fingers and was caught in the trap and drowned by the rising tide. Many tons of these shells are worked up for sale as ornaments and curios by a Los Angeles house. The meat of the abalone is dried in large quantities by the Chinese and shipped to China, where it is grated and used in soups.

Mineral Springs of Santa Barbara and Ventura Counties.

SANTA BARBARA HOT SPRINGS.—Dr. H. M. Biggs says:*

"The hot sulphur springs of Santa Barbara are situated at the head of a deep cañon, about five miles to the northeast of the town of Santa Barbara, at an elevation of fourteen hundred and fifty feet above the level of the sea. They number in all seven, and seem to be of two distinct varieties. Those nearest the head of the cañon escape from crevices in the rock, and are four in number, all appearing to have the same properties, the most sensible of which are free sulphur and sulphureted hydrogen; their temperature, 114° Fahr. Another spring is situated about one hundred yards off, in a westerly direction from the first mentioned—temperature, 117° Fahr. Its principal constituent is sulphate of alumina, evident from the thick incrustation of this salt on the under surface of the rock beneath which this water escapes; it also tastes strongly of sulphate of iron, and is said to contain soda and potash, and a trace of arsenic. The two remaining springs are located in a branch cañon, about one hundred rods in a northerly direction from the last one mentioned, and appear to possess the same qualities, with the exception of the temperature, which is only 112° Fahr. No thorough analysis of these mineral springs has ever been made, at least in our time.

"It is said that while this country was in possession of the King of Spain, a corps of scientific men was sent out to this coast, commissioned, among other things, to test the properties of the several mineral springs known to abound here, and that in their report they pronounced the Santa Barbara Hot Sulphur Springs to be the best and most medicinal, and superior to any other in California for the cure of many diseases. Whether they came to this conclusion from actual analysis, or from simply witnessing their effect is not known. Certain it is that at the present day they are becoming famous for their curative effects in many cases of rheumatism, paralysis, various diseases of syphilitic origin, and skin-diseases generally; and from

* "Mineral Springs of the United States and Canada," by George E. Walton, M. D. D. Appleton and Company, New York, 1883.

a persistent use of the waters (drinking and bathing) many individuals have been cured of such affections."—*March 22, 1872.*

The late Hon. Oliver P. Morton, United States Senator from Indiana, spent some time at these springs in 1874. They are located at an altitude of fourteen hundred and fifty feet.

Bulletin 32 of the United States Geological Survey gives the analysis of these springs as follows:

Santa Barbara Hot Springs.

CONSTITUENT.	No. 1, main spring, Hot Springs Cañon.	No. 2, main spring, side cañon.
	Parts in 100,000.	Parts in 100,000.
Sodium carbonate	29·6	24·8
Sodium sulphate	5·0	Trace.
Sodium chloride	8·7	7·6
Potassa	Trace.	Trace.
Silica	4·2	6·0
Carbonic acid	Trace.	Trace.
Sulphohydric acid	Trace.	Trace.
Calcium	Trace.	Trace.
Total	47·5	38·4

San Marcos Hot and Cold Sulphur Springs.—These springs are situated in Mountain Glen, a picturesque cañon seven miles northeast. There are somewhat primitive but very comfortable accommodations for guests, who can come within a short distance of the springs by the daily stage from Santa Barbara.

Las Cruces Hot Springs are forty-two miles from Santa Barbara, near the Gaviota Pass. They have quite a local reputation for curing skin-diseases and rheumatism.

Espado Hot Sulphur Springs are three miles from Point Arguello.

Matilija Hot Springs are the most noted of any Ventura County springs. There are several of them in Matilija Cañon, fifteen miles from San Buenaventura and six miles

from Nordhoff. Arrangements for transportation can be made with the daily Ojai Valley stage that leaves San Buenaventura at 2.30 P. M.

There are comfortable accommodations and bathing facilities for a limited number of invalids.

Dr. R. E. Curran, of San Buenaventura, sends the following analysis of the Matilija springs water. The analysis of Matilija spring is copied from that made by J. W. Clarke, chief chemist of the United States Geological Survey:

Report of Analysis No. 727.— Water from Matilija Hot Spring, received from Dr. S. Bowers.

	Parts in 100,000.
Potassium chloride (KCl)	62·2
Sodium chloride (NaCl)	1,387·6
Magnesium chloride ($MgCl_2$)	6·8
Magnesium sulphate ($MgSO_4$)	7·3
Calcium sulphate ($CaSO_4$)	16·0
Calcium carbonate ($CaCO_3$)	96·5
Calcium silicate ($CaSiO_3$)	62·9
Silica (SiO_2)	8·8
Total	1,648·1

Trace of hydrogen sulphide (H_2S) reported July 11, 1887.

The following is an analysis of water from one of the cold-water mineral springs on the Temescal Rancho, in the eastern part of Ventura County:

Carbonate of soda	·771
Carbonate of lime	·181
Carbonate of magnesia	·054
Sulphate of soda	·030
Sulphate of lime	·003
Sulphate of magnesia	·764
Sulphide of sodium	·203
Chloride of sodium	3·218
Chloride of lithium	A trace
Hydrogen sulphide (free)	2·046

There are cold sulphur springs about ten miles from San Buenaventura, on the Ojai Valley road.

Bulletin 32, United States Geological Survey, reports sulphur springs on the west side of San Fernando Peak, Ventura County.

Hotels of Southern California.

Alhambra, Los Angeles County : Alhambra.

Anaheim, Los Angeles County : The Planters'.

Beaumont, San Bernardino County : The Highland House.

Burbank, Los Angeles County : First-class hotel (not named), almost completed at time of writing.

Colton, San Bernardino County : Transcontinental, Davis, Colton.

Del Mar, San Diego County : The Del Mar.

Downey, Los Angeles County : The Central.

Fullerton, Los Angeles County: The Winchester.

Garvanza, Los Angeles County : Garvanza Park.

Glendale, Los Angeles County : The Glendale.

Los Angeles, Los Angeles County : Nadeau, St. Elmo, Pico, Depot, Belmont, $2.50 to $4 ; Natick, St. Charles, $1.50 to $2.50 ; Ashley, Ardmour, Argyll, Bellevue Terrace, Clifton, Lindley, Marlborough, Norwood, Rosmore, St. Nicholas, Whipple, Wiswell ; many private boarding-houses.

La Canada, Los Angeles County : Good hotel almost completed.

Long Beach, Los Angeles County : Long Beach Hotel ; numerous boarding-houses.

Lugonia, San Bernardino County : Terrace Villa.

Monrovia, Los Angeles County : Grandview.

Monte Vista, Los Angeles County : Park Hotel.

Newhall, Los Angeles County : Southern.

Nordhoff, Ventura County : Ojai Valley House, Oak Glen Cottages.

Oceanside, San Diego County : Oceanside.

Ontario, San Bernardino County : Ontario.

Orange, Los Angeles County : Palmyra, Rochester; another very large hotel in process of erection.

Pasadena, Los Angeles County : Raymond, Carlton, Acme, Los Angeles ; many private boarding-houses.

Pomona, Los Angeles County : Palomares.

Riverside, San Bernardino County : Rowells, Glenwood; private boarding houses ; The Rubidoux, an immense establishment now building.

San Buenaventura, Ventura County : Santa Clara House, Palace, Occidental ; Rose Hotel now building.

Santa Barbara, Santa Barbara County : Arlington, San Marcus, Occidental, Commercial, and many private boarding houses.

San Bernardino, San Bernardino County : Stewart, Southern, Starkey, St. Charles.

San Diego, San Diego County : Coronado, St. James, Florence, Horton, and many boarding-houses.

San Juan-by-the-Sea, Los Angeles County : Large hotel almost completed.

Santa Ana, Los Angeles County : Brunswick, Taylor, Lacy.

Santa Fé Springs, Los Angeles County : Santa Fé Springs Hotel.

San Fernando, Los Angeles County : Hotel almost completed.

Santa Monica, Los Angeles County : Arcadia, Santa Monica, and many boarding-houses.

South Riverside, San Bernardino County : South Riverside.

South Pasadena, Los Angeles County : South Pasadena.

Whittier, Los Angeles County : Whittier.

STATISTICS.*

COUNTIES.	Population in 1880.	Population in 1887.	Increase in seven years.	Per cent of gain in 7 years.	Assessment of 1886.	Assessment of 1887.	Per cent of gain in one year.	School children in 1886.	School children in 1887.
Los Angeles ...	33,379	83,334	49,955	149	$37,560,880	$99,796,666	147	16,615	19,380
San Bernardino.	7,786	19,802	12,020	155	8,089,805	15,987,995	98	4,130	4,606
San Diego. ...	8,618	21,565	12,947	150	9,961,233	18,712,518	89	4,041	5,015
Santa Barbara .	9,522	16,976	7,454	78	8,585,485	15,085,982	75	3,844	3,948
Ventura.....	5,078	8,690	3,617	71	4,698,698	6,872,819	84	1,889	2,021

NOTE.—Besides authorities mentioned in the text of this book, the author of Part II has made liberal use of the files of the "Daily Times," "Daily Herald," "Daily Tribune," "Daily Express," and of the "Rural Californian," all of Los Angeles; of the San Diego "Sun" and "Union"; of the Riverside "Daily Press"; of the San Bernardino "Times," "Index," and "Courier"; of the Pasadena "Union" and "Star"; of the Ventura "Free Press"; of the Santa Barbara "Daily Press" and "Daily Independent," and of the "Journal of Commerce." He has also quoted liberally from the following works: "Santa Barbara as it is," by Mary C. F. Hall-Wood; "History of Los Angeles County," by J. Albert Wilson; "History of Santa Barbara and Ventura Counties," by Jessie D. Mason. The numerous trade pamphlets that have been issued about Southern California, especially those published by Warner Brothers and Crosby, the excursion agents, have been of great use to him.

For the photographs, from which the illustrations have been engraved, we are indebted to Messrs. Shaffner, Stanton, Rogers, and Golsh, of Los Angeles, and Tabor the well-known San Francisco photographer.

* Compiled by L. M. Holt, of the "Riverside Press and Horticulturist."

GENERAL NELSON A. MILES, U. S. A.

PART III.

COMPARATIVE VALUATION OF LANDS AND PRODUCTS.

By GENERAL NELSON A. MILES, United States Army.

Nothing is more interesting than to watch the progress of our wonderful country: to study its resources, witness its development, and endeavor to anticipate what the great future has in store for it. The rapid strides that have been made in utilizing its virgin soil and its inexhaustible resources, is the marvel of the age; the freedom, enterprise, and intelligence of its people have overcome every obstacle, and utilized every element of wealth with which they have been so richly endowed, and it would puzzle the philosopher and statesman to anticipate what in wealth, power, and influence we shall in the near future attain, both as a people and a nation.

It is not, however, our resources in general, or what may be the future of the Pacific coast or that line of Southwest Territories—including Southern California, Arizona, and New Mexico—that I purpose to consider at this time, but it is of a small section of the southwestern part of the United States, small in area, and yet the five counties in Southern California embrace a territory nearly the size of the State of New York, and with natural resources of ten

times its value. Although, to compare the resources of this section with other parts of the United States is interesting and somewhat instructive, that is not especially my object, but it is more particularly to call attention to what can be produced here, and the area of such production in contradistinction to that produced in foreign countries, upon which we have been contributing largely to their wealth.

Without reference to the mild climate of the five counties of Southern California that makes it possible to grow almost every variety of fruit, plant, and vegetable known to the temperate and torrid zones, that gives the people freedom from the aches and pains consequent upon life in the malarial States of the South, and the cold States of the North and East; and without reference to the advantages accruing from life in the Italy of America, whereby health and happiness is assured under ordinary circumstances, where the summers are cool and pleasant, and the winters are as gentle as spring need be; where the ocean-breezes, the year round, are like the revivifying influence of balm of Gilead to the stranger from the East; it is not for us to consider, but the possibilities and future growth of the fruit and vineyard industries that are now attracting the attention of people in all parts of the United States, as well as the producers and officials of France, Spain, Italy, and other countries of Europe, who have monopolized these industries in the past, enriching themselves with millions of dollars yearly from the people of this country. It is these millions of dollars that will in the near future be turned from the coffers of Europeans, largely to the coming producers of Southern California. Of the principal countries from which we have been importing our fruits, nuts, raisins, and wines, France, through the ravages of the phylloxera, has not been able to supply her own demand for raisins and wines, which she imports from other countries of Europe,

and she has also been importing vines from America to rejuvenate her vineyards. Malaga, which is a province of Spain, contains about 2,500,000 acres, of which amount about 590,000 acres are suitable for the cultivation of raisins, and only 225,000 acres are devoted to the production of the Malaga grape of commerce. When we take into consideration that there is still over 3,000,000 acres left in Southern California that can be utilized for the production of raisins, and giving the same rate of production per acre as that obtained at Malaga (and figures show that the yield per acre is much larger in California), the land still open for viticultural pursuits will be able to produce 60,000,000 pounds. It is said that the largest vineyard of France has an area of fifty-four acres, and the produce from it made into wine and placed on the market is valued at $100,000 annually. In Southern California there are vineyards containing over a thousand acres of vines, but these are now being cut up into small tracts, and when sold will be worked to better advantage.

Very few people east of the Rocky Mountains are aware of the area of the five counties comprising Southern California, and it will be a matter of surprise to read that they have an area almost four thousand square miles larger than the State of Ohio, and are within three hundred square miles of being as large as the State of Pennsylvania—two of the largest agricultural States in the Union. The five counties spoken of are Los Angeles, San Bernardino, San Diego, Santa Barbara, and Ventura. These counties, which are divided into numerous large ranches containing thousands of acres, will be divided into tracts to suit farmers and orchardists, as soon as the demand makes it necessary.

That Southern California will have an enormous population in the near future, goes without saying. With her immense resources, being the only part of the United States that has a climate almost frostless, which permits of the

growth of all the fruits, berries, vegetables, grapes, and nuts known, she will be called upon not only to supply the home consumption, most of which has been imported heretofore, but finally make it an important item in the export trade of our country by supplying nations with our canned fruits, wines and raisins. That it will do so at some future day is not as wild a prediction as one would suppose, for at the present time the canned fruits of California are very much sought after in England, France, and other countries, where they obtain higher prices than the native product.

There are only certain farmers, planters, and orchardists east of the ninety-fifth parallel, who make a profit in their pursuits. It is either the proprietor of vast farms of hundreds and thousands of acres of corn, wheat, oats, or hay; or the planter who numbers his acres of cotton by the hundreds, and the orchardist, should his crop not prove a failure through frost. Let the agriculturist take the past year as a sample, and, after estimating the cost of his land, the taxes, the cost of implements and fertilizers, and comparing it with the amount produced per acre, find the net profit to him, and compare it with the net result of an acre in Southern California of grapes or fruit of any kind; the amount realized by the California producer will be so far in excess of his profit, if any he has, that he will be fully convinced of the advantages accruing to the agriculturist or orchardist of Southern California. Land for all practical purposes of the agriculturist and orchardist may be purchased at from twenty to one hundred dollars per acre, while land that is improved with orchard or vineyard may be purchased at from one hundred to five hundred dollars per acre, realizing at once a profit to the owner. As ten to twenty acres is all that is necessary for the support of a family, it does not require a large capital to start a farm, orchard, or vineyard. While it takes three to ten years before any of the most profitable fruits or grapes

bring large returns, it must be borne in mind that vegetables of all kinds, as well as berries, grow the year round, and the strawberry, the most perfect of all berries, can be had in the market every month of the year. On one acre of ground the settler can raise, at all seasons of the year, a greater variety of vegetables than his family will be able to consume. The expense of building is not near so high as in other States, as the climate permits of living in houses that would be untenable in winter in other parts of the country. Expensive agricultural implements is a factor with which the fruit-producer does not have to contend, nor will the use of fertilizers be necessary for many years, which does away with large items of expense to the farmer. The cost of fertilizers to the farmers in the United States during the year 1879, according to the census statistics of 1880, amounted to $28,586,397, while the value of farming-implements and machinery on farms amounted to $406,-520,055. These are startling figures, and land in Southern California, that does not require the use of fertilizers, should be placed at a higher valuation. In the following comparative statements, gleaned from various public documents, and compiled from various other sources, it is intended in a concise form to convey to the reader facts and figures not heretofore presented collectively. The prices of land given for the cultivation of the various fruits and grapes of Southern California is that obtained at present, while those of other States were taken from the census returns of 1880.

Taking the imports of the year 1884 as an average year, there were imported into the United States 57,000,000 pounds of French prunes; 4,732,269 pounds of almonds; 7,945,977 pounds of figs; 53,702,220 pounds of raisins; 18,624 car-loads of oranges and lemons; 244 car-loads of preserved fruits; 244 car-loads of olive-oil, and 636 car-loads of other fruit. This amounted to $16,705,574 in

fruits and nuts ; $547,017 in olive-oil ; $2,834,816 in champagne and other sparkling wines ; $2,241,682 in still wines in casks and $1,199,205 in bottles. In fact, between June, 1884, and June, 1885, there were about $20,000,000 paid for imported fruits and nuts that California can produce.

According to the census of 1880, there were a total of 4,008,907 farms in the United States, with an average size of 134 acres, or a grand total of 536,081,835 acres, of which 284,771,042 are improved, and 251,310,793 unimproved ; the value, including fences and buildings, amounted to $10,197,096,776, giving an average value of $19.02 per acre. The census for 1880 also shows that there were in the United States 62,368,504 acres planted in corn, with a total production of 1,754,591,676 bushels. This makes the average yield per acre 28·13 bushels, and as the average price per bushel was 42·6 cents, the average value of the crop per acre was $11.98. The average valuation of the land upon which this corn was planted was $19.02.

There were, in 1880, 16,144,593 acres in oats, yielding 407,858,999 bushels, which gives 25·26 bushels per acre, commanding an average price of 35·3 cents per bushel, which makes the value of the grain per acre $8.91.

The same year there were 35,430,333 acres in wheat that produced 459,483,137 bushels, average yield 12·96 bushels per acre, average price per bushel 104·9 cents, value of wheat per acre, $13.59.

Of rice, 174,173 acres were sowed, producing 110,131,-373 pounds ; average yield per acre, 632 pounds ; value per acre of rice, $42.66. These are the average prices obtained for the preceding ten years, as compiled by the United States Commissioner of Agriculture.

There were 14,480,019 acres in cotton cultivation in 1879, according to the census of 1880, yielding 5,755,359 bales of cotton, the average value of one acre being $22.68. Of tobacco, the acreage was 631,061 acres, producing

469,816,203 pounds. Cost of production is estimated at $6.05 a hundred pounds; average value of one acre, $26.28.

The following statements, taken from the "Report of the Commissioner of Agriculture," give information as follows:

In the year 1884, the number of acres of land cultivated for cotton was 17,439,612, the number of bales of cotton produced was 5,682,000, the value of the cotton being $253,993,385. The average value per acre for cotton was $14.56, the yield was thirty-three hundredths of a bale to the acre, and the average value of the land was $6.40 per acre.

The total production of corn, in 1884, was 7,875,970,538 bushels; the total number of acres under cultivation was 330,225,082; the total valuation of the crop was $3,521,850,889; the average value per bushel was 44·7 cents; the average yield per acre in bushels was 23·9. The average value of the yield per acre for each year was $10.67; and the annual average for the ten years preceding was $11.54. The average price for five years was 44·7 cents; for the ten preceding years, 42·6 cents. The average value, which was $504,571,048 for ten years, is $704,370,178 for the five years since 1879, an increase of almost 40 per cent.

The statement for wheat, for the five years ending in 1884, shows the total production in bushels to have been 2,319,866,588; acres planted, 188,694,409; total value of the crop, $2,090,195,934; average value per bushel, 90·1 cents; and average value of yield per acre, $11.08.

The Commissioner, in his report, remarks that "the value of an acre of wheat averaged only $8.38 for the year 1884 on an average yield of thirteen bushels, the lowest return of which there is any record, and a figure lower than the accredited estimates of the cost of production. It may confidently be assured, therefore, that there is no profit in wheat production at present prices. But there is a class of farmers who made a profit on wheat in 1884. Those who secured twenty-five bushels per acre, or twenty, obtained a

small profit, provided the cost of fertilizers was not too large an element of it."

After carefully considering these statements of the most important crops in the United States, it is cheerful to be able to consider the benefits and profits of what would be a very small farm in the East—that is, a ten or twenty acre vineyard or orchard, in Southern California. But it is facts and figures that convey the true meaning to those who are unaware of the large profits that appear to be derived, with such a small outlay of capital and labor, and such is given in the following statements in regard to the cultivation and production of the various fruits, etc., of Southern California, which were obtained from statements of the producers themselves. In the production of grapes, the most important of which is the raisin-grape, the following is the acreage in the five counties comprising Southern California in the present year compared with that of last year:

COUNTIES.	Acreage, 1886.	Acreage, 1887.
Los Angeles	15,560	17,120
Santa Barbara	900	1,125
Ventura	380	456
San Diego	774	1,000
San Bernardino	3,470	4,080
Total	21,556	24,333

Improved land for the business of cultivating raisin-grapes is valued at from $100 to $500 per acre, the third year yielding $25 per acre, the fourth year $50 per acre, the fifth year $100 per acre, and when the vines are in full bearing, from $100 to $300 per acre. The vineyards of California yield from six to eight tons per acre in full bearing, while in Malaga, the yield is less than two and a half tons to the acre. Statistics show that California is furnishing for home consumption a little more than a third of the

amount of raisins imported, and it will be years before the vineyards of Southern California will be able to raise enough for the use of the people of the United States. Raisins are put up in five, ten, and twenty pound boxes, and the following is the out-put from the year 1875 up to the present time, the year 1887 being estimated at 1,000,000 full boxes, or twenty million pounds; for the year 1875 there were 11,000 boxes; 1876, 19,000 boxes; 1877, 32,000 boxes; 1878, 48,000 boxes; 1879, 65,000 boxes; 1880, 75,000 boxes; 1881, 90,000 boxes; 1882, 115,000 boxes; 1883, 125,000 boxes; 1884, 175,000 boxes; 1885, 500,000 boxes; 1886, 703,000 boxes; and in 1887, 1,000,000 boxes. The foreign importation of raisins to the United States for the year 1884 amounted to 53,700,000 pounds. A raisin-vineyard costs very little more than a crop of corn for cultivating and handling, and yields a sure crop every year. Assuming that the vineyard is five years old, and the raisin-producer does no work, and all the labor has to be paid for, the bill of expenses and receipts will be about like this, if proper judgment be used: The total expense of cultivating an acre of grapes is $15; the curing and packing of an acre of grapes, making 100 boxes of raisins, is $55. Five-year-old vines will average from 100 to 150 boxes per acre. The average price for raisins for the past four years has been about $1.60 per box. Placing the price at $1.50 per box for the four grades, we have a total net profit of $95 per acre. Many vineyards do better than this, and it is given as a low estimate. Occasional vineyards have been known to produce grapes enough the second year after planting to pay expense of cultivation.

Ten acres of vines for raisins, after they are in full bearing, will provide a competency for a family, and is land enough for any man of moderate means to cultivate. It is three years before the vineyard commences to pay for the cultivation, and from that time on, if well cultivated, will

yield on an average four tons to the acre. At fourteen years the vines are in full bearing and the yield is much larger.

The President of the California Horticultural Society gives the following figures, showing the cost of one acre of wine-grapes:

Plowing twice before planting, at $2	$4 00
Harrowing and pulverizing the same	50
Cuttings (1,000 vines, 6 feet apart)	5 00
Planting, per acre	2 00
Two plowings after planting	3 00
Cultivation and final pulverization	50
Total cost, end of first year	$15 00
Pruning, per acre	$1 00
Plowing twice, at $1.50	3 00
Cultivating twice, at 50 cents	1 00
Hoeing near the vine	1 00
Total cost, second year	$6 00
Pruning the vines and removing the wood	$2 50
Plowing twice	3 00
Cultivation twice	1 00
Hoeing near vine	1 50
Total cost, third year	$8 00

The above estimate was probably made from the planting of a very large vineyard, and in estimating smaller tracts it may be doubled with safety.

The following appears to be the situation of viticulture in France in the year 1884, as stated in the statistics of the Minister of Agriculture of France: "Out of a total area of 5,967,263 acres planted in vines before the appearance of the phylloxera, 1,886,583 acres have entirely disappeared, and 1,588,155 acres are seriously attacked. At the present moment we have left but a little over 2,470,000 acres of vineyards. Fortunately, or otherwise, the departments that

have yielded the largest quantity of cheap wines have been most cruelly tried; L'Herault, for example, after yielding one sixth of the entire production of France, has witnessed the almost complete disappearance of its vines. So, after the many improvements in the methods of cultivating the vine, the use of insecticides, submersion, the planting of American stocks, the production that has steadily diminished since 1870, has declined from 1,636,800,000 gallons to 792,000,000 gallons. From that fatal year France has been tributary to her neighbors, which have been spared of the scourge, and compelled to ask of them at each vintage the complement of wine for her own consumption. The total of the imports during these fourteen years in question is not less than 939,770,799 gallons, of which 666,282,654 gallons come from Spain, and 173,390,224 gallons from Italy.

"Let us calculate the sum necessary to balance our account for these enormous quantities of wine. The hectolitre (26·40 gallons) which, taking the official figures, is worth an average of 41·75 francs ($8.35), or about 32½ cents per gallon; valuing the franc at 20 cents, we reach the enormous figure of $296,238,306, of which $242,397,544.60 corresponds to Spain, and $54,840,762 corresponds to Italy. The last four years alone have cost us $238,670,179. Together with this prodigious consumption of wine, we must not omit to point out the importations of raisins intended for the manufacturing of wine. Of these we have purchased on an average, for the past three years, more than 132,000,000 pounds. Here we have $5,000,000 per annum to add to the above deficit. At this rate, Spain, Italy, and Greece have nothing else to do but to profit by the position they are placed in by our commercial treaties, before which we have merely to submit."

The paper further states that, during the year 1883, it is estimated that 49,400 acres have been replanted with American vines.

During the year 1886 Italy sold to France about 49,000-000 gallons, and Spain, in exact numbers, furnished France 168,379,316 gallons of wine. From these figures one can realize the amount of money there is in the cultivation of the grape, and at the same time realize that the vine industry of California is in its infancy. What her future will be rests with the enterprise of her people.

Oranges.

Unimproved land for the cultivation of the orange can be purchased at $200 to $500 per acre; improved land with trees sells at $500 to $1,500 per acre, according to the age of the tree and location of the grove. The estimated cost for an acre of ten-year-old orange-trees is $1,000 per acre. An acre of land will support seventy-five ten-year-old trees, and yield $200 to $500 worth of fruit per year. The number of orange-trees in the county of Los Angeles in the year 1878 was 103,500, and for the year 1886, 729,000. If the producer receives a dollar net profit on each box of oranges, it will pay. The different producers in Southern California realize all the way from $150 to $400 net per acre on their groves. Estimating the lowest net profit at $200 per acre, the owner of ten acres will realize more with less labor and trouble, than if he were the possessor of a two or three hundred acre farm in the East.

Deciduous Fruits.

If the orchardist has an orchard of apple, pear, plum, peach, or apricot trees, and they are planted seventy to the acre, after the trees are eight years old he may reasonably expect 200 pounds to the tree, which would make 14,000 pounds to the acre. At the low estimate of three quarters of a cent per pound he would realize $105 per acre.

Figs.

But of all the fruits grown in California the fig has, perhaps, the greatest future, and Southern California should at least supply the demand of the United States. The best varieties to be grown are the white varieties, as we receive vast quantities annually from foreign countries which should be produced in California. There would be no limit to the amount of figs that can be sold at good prices, when dried in a manner to compare with the imported. The imports into the United States in the year 1884 for this one fruit was 7,945,977 pounds.

The Olive.

An authority on olives says: "Cuttings taken from bearing trees, and planted where they are to remain, will pay expenses of cultivation the third year. Ten acres will support a family the fourth year, and ever afterward be a source of rich revenue. Olive-trees in San Diego County have produced at a crop from $100 to $150 per tree. The olive has become an article of universal consumption. Its oil is indispensable in medicine and surgery, and is largely used in the manufacture of fine woolen goods. There is no limit to the demand for it. Olive-culture offers conditions peculiarly adapted to Southern California. It requires a warm, dry land, and will not flourish in moist soil. Trees are now growing in San Diego County that at eight years old produced 2,000 gallons of olives to the acre. The European standard is eight gallons of olives to one gallon of oil, which gives a product of 250 gallons of oil per acre. The oil sells readily at $5 per gallon, which gives an income $1,250 an acre for the best eight-year-old trees. The net income from such a crop would be not less than $1,000 per acre, and with good care the crop is large and sure from year to year for a century.

"In Italy, Spain, and the south of France there are 8,000,000 acres devoted to olive growing, and about 160,000,000 gallons of oil are produced annually. That made in France—in great part from American cotton-seed—amounts to $100,000,000 annually; of this 500,000 gallons are brought into our country, upon which a duty of half a million dollars or more is handed over to the United States Government.

"There are about a thousand acres in olives in California, upon which there are 63,027 bearing trees. In California the average number of olive-trees per acre is about 100. The fruit is gathered usually from November to January, or later. When picked, the olives are divided into grades, and will average seventy-five cents per gallon in value, and are usually put up in barrels. The best are worth $1.25 per gallon. If made into oil the olives are crushed thoroughly and pressed. Water is then added, when they are again pressed and a second quality made. They are pressed a third time, make a third quality, and a fourth grade is also made. In Italy the residue is pressed into bricks and used for fuel, but in California this is unnecessary. The oil is worth about $5 per gallon, and the receipts from a California olive-grove have several times reached as high as $2,000 per acre. But with a yield of 200 gallons per acre (which is a small amount), valued at $5 per gallon, the returns from each acre would amount to $1,000. In Italy, occasional cold years blast the crop, and in some instances destroy the trees, but in California loss from this source would be improbable. In the interior of California they should also also be free from the ravages of insect pests or diseases. And when attacked the trees may be cut back to the stump, from which will shoot a new and healthy growth. In France it is calculated that about 1,250 gallons may be produced each year from an acre. In California, with a more even climate and a more fertile soil, the yield is much larger."

Profit on Forest-Trees.

A prominent producer of Los Angeles, California, gives the following statement regarding profits on forest-trees in Los Angeles County: "Now, as the profit to be derived from planting forest-trees is the most important question of any to one who desires to plant a forest, I will commence at the beginning by supposing that an individual wishes to plant, say, sixty acres. This would take 26,100 plants.

26,100 eucalyptus-plants, at $10 per thousand	$261 00
Planting them out	175 00
Plowing the land from eight to ten inches	150 00
Harrowing and pulverizing	40 00
Man to cultivate and care for, six months	360 00
End of first year's work	$986 00

"The second year will require a man eight months, at $60 per month, including team and board, which would amount to $480. After that there would not be any expense to amount to anything. Total amount the first year, in round numbers, $1,000; the second year, $500. I have made liberal allowance. Having had experience, I am prepared to say that these are the outside figures. If the trees are well taken care of when a year old they ought to average twelve to fifteen feet in height, and the second year thirty feet, and when five years old will pay a handsome profit. There being 435 trees to the acre, eight trees when five years old will make a cord of stove-wood, worth $9 per cord, which will cost half this sum to have it prepared for and delivered to the consumers, leaving a net profit of $243 to the acre, or $48.60 net per acre per annum for each year of the five; and in five years after there will be as much or more wood as at the first cutting. It is quite possible that this timber will be used for various purposes in the near future that will make it still more profitable. It will be readily seen that after the first planting there will

not be any expense, as all that is ever required, after the timber is removed, is to take off some of the sprouts. There is no reason why one planting will not last for 50 or 100 years, and pay interest on a value of $500 per acre. The best time to plant in this country is February or March."

The above trees referred to are the red- and blue-gum trees; 25,000 red-gum (*Eucalyptus*) trees pay twenty per cent per annum on the investment as fuel-producers.

The walnut-tree does not bear before it is six years old. A ten-year-old walnut-tree bears a hundred pounds of nuts, which can readily be sold at six to ten cents per pound, making six to ten dollars for the crop from one tree, and as twenty-five trees can be planted to the acre the yield will be $150 to $250 per year. In older trees the yield, of course, is larger and the profits greater.

It must be taken into consideration that in the cultivation of these delicate and valuable plants and trees, more skill and intelligence are required than in producing the ordinary farm-products.

In comparing these estimates of land values and what can be produced, and the possibilities of this district of our country, it would seem that there is still room for many of those in the far East who are contemplating the effects of the next "strike," or the sad results of a "corner" in any one of the principal food-products which constitute the actual necessities of life, who with industry and economy could build homes for themselves in Southern California, and in reasonable time witness the fulfillment of the Divine prophecy that, "they shall sit every man under his vine and under his fig-tree."

TREES, SHRUBS, AND WILD FLOWERS OF SOUTHERN CALIFORNIA.

By Mrs. JEANNE C. CARR, Pasadena, California.

All the efforts of art in landscape-gardening seem trifling to one familiar with Nature's wild parks and gardens in this land of suprises.

The effect of the early rains upon the warm and generous soil is magical. The pale-faced Eastern visitor and the native Californian alike respond to the joyous excitement of the resurrection of spring, which suddenly transforms every dusty roadside and dry cañon into a flowery dell or verdant carpet, so rich in its materials and combinations as to afford endless studies in color and form.

The commencement of the vernal year varies greatly, but Christmas nearly always finds the earth thickly furred with the starry mats of *Feleri*, with young grass and clover, and from the first rain to the end of April the floral display increases, until, at its height, distinct bands of color, blue or orange, may be traced in the landscape for many miles.

> "No numbers have counted my tallies,
> No tribes my house can fill;
> I sit by the shining fount of life,
> And pour the deluge still";

seems ever the song of Nature where her sunshine and flower-gold have been bestowed in such lavish abundance.

On no part of the Pacific coast has the soil been sown so thickly with natural forage-plants. The immense fields of wild oats found growing upon Catalina and other sea-islands are described as marvelous, and the forests of mustard "trees" along the old stage-roads of the southern

counties were equally worthy of such description as may be found in the pages of "Ramona."

Luscious *Alfieria* crowded the neglected nooks and corners of the old ranches with its rank herbage, and long after every leaf and blade had shriveled in the summer heats the abundant oily seeds of the burr-clover furnish nourishment for flocks and herds.

The flowers which contribute most to Nature's topiary work are annuals, which have here an unlimited range, and long season of bloom.

The seeding of these natural parterres has been so exquisitely adjusted that even the salt-marshes and sea-beaches have their full share of compositæ-gold, abronia-purples, and crystalline creepers with longer names.

In February the advance-guard of the poppy family (*Eschscholtzia Californica*) is observed taking possession of old furrows in fields and orchards, its graceful leaves bright with the morning dew. Two weeks later rank patches, with open, bright-yellow flowers, appear in company with blue *Nemophilas*, nodding cream-cups, purple *Calendrinias*, and yellow violets, which have bronze linings and delicate penciling of black lines upon their petals.

Daily, the poppy-gold deepens into orange. "Shooting-stars" (*Dodecatheons*), the only "cowslips pale" that we have in America, cover the moist banks. *Ahittavias* hang their purple bells. White "forget-me-nots" exhale their delicate odor. The painted cup dons its uniform of scarlet and green, and as one bright token succeeds another, we realize that spring has come to stay.

But not for many weeks shall we reach the summit of the floral year, when, perchance, after a walk or ride through miles of poppies, in a bath of color so vivid, and still further intensified by the satiny sheen of the flowers that the senses are intoxicated with its splendor, we touch an island of blue larkspur or lupine with a sense of relief and rest.

South California is lupine and larkspur, as well as poppy land, for of the first we have in the State twenty-three, and of the second eleven, well-defined species.

Here we miss the great yellow lupine, which near San Francisco grows into a superb bush, rivaling the laburnum, but we have a representation which gives us every shade of violet, purest blue, purple, and pink. *Delphiniums* are more beautiful still, the splendid *cardinale* which often grows ten feet in height, fairly illuminates the sides of cañons in late summer.

With these arrive the numerous *Pentstemons*, each more lovely than the last; some tall and slender, with rows of coral or pure scarlet bells depending from slender stalks, others purple, covering the beds of gravelly-streams with royal grace. A fine yellow *Pentstemon* is found near San Diego; *Pentstemon cordifolius* is a favorite trailer in our gardens.

The *Mimulus* family is equally brilliant and well-represented. Here, too, is *Castilleia*, the painter's brush or Indian plume, identical with that of the East. Another closely allied family, the *Orthocarpi*, with eighteen species, all Californian, make an aftermath of blossoms, and linger into autumn. That every Eastern heart keep true to its early loves, *Lobelia splendens* brings to us the scent of meadows and the memory of summer rains.

A very large proportion of our most showy plants are Compositæ, represented by one hundred and twenty-four genera and about five hundred species. In this group are found the magnificent thistles, sunflowers, and the myriad blooming *Leptosyne gigantea* of Guadaloupe Island. Some, like the genus *Actinolepis*, keep their heads well wrapped in silver wool, and the dandelion is here more lovely in seed than in flower.

All through the months of March, April, and May, plants of *Layia platyglossa* are scattered over the ground

as thickly as star-dust in the sky. The children call it "tidy-tips," each golden petal being daintily fringed with white. It is nearly always found associated with the moss-like *Gilia dianthoides*, the most charming member of a family distinguished for modest graces.

One member only, *Ipomopsis elegans*, is found in Eastern gardens: here we have forty-six species, enough to make a brilliant flower-show of themselves.

Four *Nemophilas*, nine *Collinsias*, four *Clarkias*, *Erythrea* (the Indian's quinine), which appears in crowded companies, and two fragrant wall-flowers are among the next arrivals. Then come a troop of mints and balms, beloved of bees, and bearing good gifts to man.

Linking spring to summer, the *Mariposas* now begin to wave a welcome to the lily family. Of all wild names this surely is the most appropriate. Mariposa is the Indian word for butterfly, and butterfly-like, these flowers are poised upon their delicate stems, each cup a chalice, and every petal irised at its heart.

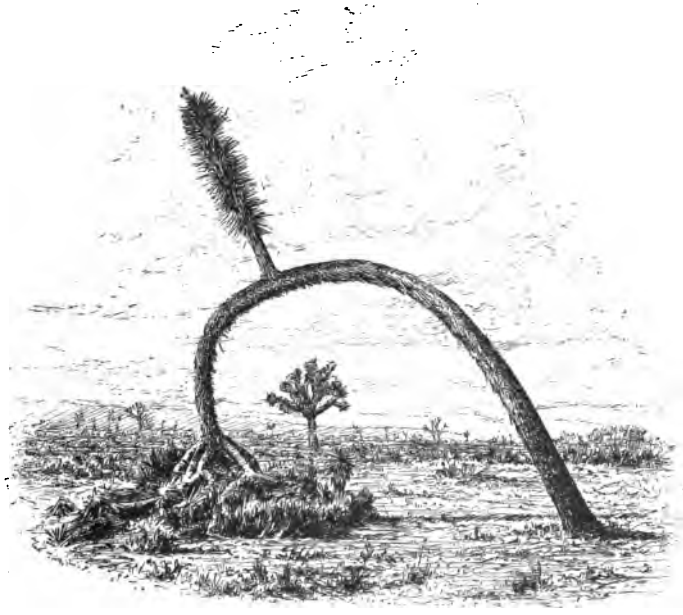
There are pure white, yellow, purple, lavender, and one bright-scarlet mariposa in Southern California. Blue ones are only found in the northern counties. The State is *rich in lilies*. *Lilium Washingtonium* ranges from Oregon to the Mexican line, always choosing high altitudes and the company of pine-trees. Parry's lily adorns the marshes. Humboldt's, the grandest of all, must be looked for in open glades of the Sierra Madre foot-hills.

Out of many Californian *Fritillarias*, only one belongs to the south.

Thus far we have considered the lilies of the field and forest. But when one sees "Our Lord's Candlestick," the stately *Yucca*,* where He has placed it among the gray

* *Yucca Baccata*, and *Yucca Whippleyi* are magnificent species, scattered in great abundance in the foot-hills.

bowlders, the spiritual significance of the command is felt in its full force. "They toil not," but live above our life where the wild bee takes part in the praise service rung by



The Yucca.

their myriad bells, and the mountain-quail rears her brood in safety among their guardian bayonets. All through their long season of bloom the miracle of their beauty lasts ; it is autumn here when the "king of the ilies" is no more seen upon the hills.

The shrubs of Southern California seem to require new terms for their description. We have tree and bush poppies ; *Dendromicons*, like the European broom, in their rush-like leaves and stems ; *Romneyas*, with large white flowers of the size of magnolias, with the same golden mass of

stamens in the center of each flower-cup. These are late bloomers.

Scarlet lobelias, salmon-colored *Mimulus*, purple *Hibiscus*, silver-leaved *Amorphas*, the white-blossomed "Oso berry," *Spiræas*, and twelve species of wild roses.

Later still the heather of the uplands, *Adenostoma*, is in full flower, also *Heteromales*, or Californian holly, bearing heavy crops of scarlet berries from Christmas to Easter. *Rhododendron Occidentale*, a most superb evergreen shrub, is found in the mountains, and fully equals the Himalayan members of this high-born family.

Conspicuous among the shrubs are *Ribis speciosum*, a scarlet gooseberry with flowers like fuchsias; *Fremontia Californica*, which often grows twenty feet high, with abundant bright-yellow flowers; and *Pickeringia montana*, of a royal purple, a shy mountaineer, much desired, yet difficult of cultivation. One *Ceanothus*, found as a shrub or small, round-headed tree, is densely covered with deep-blue flowers; its wood is of a rich-garnet color, much sought after for inlaying. A type of faithfulness, a tiny shrub, blooms through every month in the year, *Zeuschneria*, the "humming-bird's trumpet." It associates with our prettiest climbers, makes a mat over which the clematis covers the steepest banks, and the *Pentstemon* hangs its curtains of polished green.

It is natural to avoid the *Cacti*, but what glimpse even of Southern California would be complete without a look at these weird children of the dust and the deserts?

One species of *Cereus* deserves cultivation for its wholesome, abundant fruit; *Opuntia rutila*, for its rich purple flowers. A collection of *Cacti* is always an interesting study; nevertheless, we cheerfully turn from them to the *Leptosynes*, the ice-plants, and *Abronias* of the beaches, which cover with bloom and fragrance long stretches of otherwise barren coasts.

Fan-Palm Tree.

That the foresting of Southern California is unimportant compared with that of the northern portion of the State, goes without saying. Nevertheless, on the southern spurs of the great snowy range are many of the crops which the Sierras yield; noble pines and snow-plants, Douglas firs, Coulter pines with enormous cones, and a few species like the Torrey pine not found elsewhere. The oaks are numerous, majestic, and have given to this section an expression of comfort and domesticity, which accounts for the passionate attachment of the early and later settlers. An oak-tree shade being almost the only shelter required during so many months of the year, a single massive tree

has not unfrequently become the nucleus of a town or village.

Quercus agrifolia, one of the black oaks, has often a spread of branches covering one hundred and fifty feet.

Century-Plant in Bloom.

The Mexican "Roble," *Quercus lobata*, is one of the grandest trees and forms natural parks of great extent. *Quercus chrysolepis*, the Californian live-oak, is very widely distributed. A shrub in the mountainous regions, it grows to

an immense tree in the valleys, and especially along the water-courses. *Quercus Wislizeni* also varies from a low shrub to a monarch of the glade; it has the darkest and most polished foliage of any of its tribe.

The natural distribution of these trees into parks has contributed greatly to enhance the beauty of the country. These are quite common along the coast in Ventura, Santa Barbara, and San Luis Obispo Counties, making a journey after the spring rains one of the most delightful experiences of the tourist.

The sycamore is here emphatically the artist's tree; at maturity often one hundred feet high, and taking a great variety of curves and deviations from its medial line of growth, it offers the most original studies at all seasons. Michaux measured some sycamore-boles on the Muskingum River which were from thirty-six to forty-seven feet in circumference; in Santiago Cañon, Los Angeles County, there is one which measures twenty-nine feet and seven inches. Near Cucumungo, a group is growing apparently upon the prostrate body of a parent tree, making a sylvan temple of the noblest proportions.

Populus Fremontii, Fremont's namesake, the California cottonwood, is another tree of rapid growth which adorns the banks of streams. It is valuable for street-planting, provided that only the male trees are selected; the female trees shed a profusion of their "cotton," which adheres to whatever it touches, and this has hitherto been an objection to its use.

The California walnut is a vigorous grower wherever there is moisture, and one of the most desirable shade-trees. It is found from sixty to seventy feet high, and from two to four feet in diameter. The flavor of the nut is superior to the walnut of commerce, but the sweetness is guarded by a shell of uncommon hardness.

The regal California Bay or laurel-tree is not found in

abundance, nor does it reach its normal size, but in nearly every mountain cañon one may gather its fragrant leaves from suckers which have grown up around large stumps, showing that "the Mexicans" understood the value of it as fuel.

Rubber-Tree and Pampas-Grass.

So great a number of forest and other useful trees are now acclimated in Southern California, that where wood may be grown as cheaply as wheat, the importance of preserving native growths may be overlooked. In cultivation we find over one hundred Australian trees and shrubs, fifty from Japan and China, and probably an equal number

from Europe, while the rubber-tree, the palm-tree, and the century-plant add to the picturesque effect of the landscape. And so rapid is the growth of these strangers to the soil, that even in middle life one may plant in hope to see

> "The spiry firs extend their lengthened ranks,
> And violets blossom on the sunny banks"

of his own garden.

PETROLEUM AND ASPHALTUM IN SOUTHERN CALIFORNIA.

By D. M. BERRY,
OF THE EDITORIAL STAFF OF THE LOS ANGELES "DAILY HERALD."

THE petroleum and asphaltum supply of Southern California are among the largest and richest in the world. A single well in the Pico Cañon has produced within the past nine years about a million dollars worth of oil, and is still producing steadily. The peculiar feature of the oil-wells of this section is their permanence. When oil is once struck in a well the proprietor can trust in its continuance. Petroleum and asphaltum were discovered here by the first Spanish settlers more than a century ago, but no attention was paid to the oil, while asphaltum was melted and used as roofing for the adobe houses of the settlers. The oil region of Southern California extends from the northern part of Santa Barbara County, along the coast through that county, thence a few miles inland through Ventura and Los Angeles Counties, a distance of one hundred and sixty miles.

The rocky crust of the earth all through this region is broken in a most remarkable manner, and the vast supply of hydrogen within the earth forces the oil through the

crevices of the rocks in thousands of places throughout the whole length of the oil-belt. The city of Los Angeles is situated on this oil-belt, and gas, oil, and large beds of asphaltum are found within the city limit. Owing to the broken condition of the rocks the drilling of wells is a slow and expensive process, requiring great care, strong machinery, and iron casing in all the wells, but the result is rich and rewarding. Every grade of oil is produced from 14° gravity up to 47°. The former is used as a hot bath for iron-pipes which are being laid everywhere for the carriage of water underground, that renders the iron impervious to rust. The grade between 20° and 33° is used largely as fuel for steam-engines, and is very valuable.

No attempt was made at refining the oil until 1856, when an attempt was made near this city; but owing to the high price of labor and machinery, and the thickness of the oil, which was surface-oil from which the volatile portion had evaporated, the affair was not a success.

About this time Charles Morrell, of San Francisco, refined a small amount of oil in Santa Barbara County, on the coast near Carpenteria, but the quality was too heavy for profitable manufacture with the means then employed. In the mean time, Andreas Pico refined a small amount at San Fernando Mission. He was probably the first refiner of petroleum on this coast.

No further attempt was made at oil development till the close of the war, when the San Fernando petroleum and mining district, thirty miles north of Los Angeles, was located with Christopher Leaming as recorder, a position which he still holds in 1887. This district has produced a larger amount of oil than any other in the State, and is now yielding a thousand barrels daily.

In 1866 the Santa Paula district was established in Ventura County by Charles Scott, who obtained and refined several thousand gallons of oil. In San Francisco two re-

fineries were established in the same year. One by Hayward and Coleman and the other by Stanford Brothers, but other avenues of trade proved more profitable and the refineries were abandoned.

In 1867 increased attention was paid to oil development, and samples of oil were sent to the Paris Exposition from the San Fernando district and from Santa Barbara County. In 1868 a large amount of oil was gathered from springs and shallow wells and hauled to Wilmington, whence it was shipped to the Metropolitan Gas-Works in San Francisco to be used in the manufacture of gas. In 1869 a good well was sunk by Mr. Hughes in Pico Cañon, now the principal oil-producing cañon in the San Fernando district.

In 1873 a refinery was established by the Star Oil Company at Lyon's Station, and the Pico oil-production refined at the rate of twenty barrels daily. All wells up to 1877 were drilled by spring-pole, when the Star Oil Company commenced drilling and pumping wells by steam-power. This great change was the grand opening of the rich oil-basins of Southern California.

In 1878, Hon. C. N. Felton, present M. C. of California, and R. C. McPherson sunk a well 700 feet deep in the San Fernando district, and struck a spouting-well of 100 barrels daily of oil of a gravity of 46° to 47°. Since that time wells have been sunk in San Fernando district, and in the Sespe and Santa Paula region in Ventura County, till there are now about fifty productive wells in the two localities producing together about 2,000 barrels per day that are eagerly sought for lubricating purposes and fuel.

Another oil-district was opened in the southern part of the county of Los Angeles in 1881, by Burdett Chandler, a veteran oil-discoverer in Pennsylvania, West Virginia, and Canada. He sunk, with the aid of poor and imperfect machinery, three wells on the Puente Rancho, twenty miles

east of Los Angeles, that struck thick oil at 30 feet, thinner at 75 feet, and a gravity of 32° at 150 feet. From lack of capital the wells were neglected for awhile, when Messrs. Rowland and Lacy commenced with improved machinery to sink deeper wells, and have struck at 700 feet copious supplies of oil and gas. They have now a supply of natural gas that furnishes all the fuel for their engines, drills new wells, pumps all the others, lights and warms the houses of the workmen, pumps the oil to a reservoir on the top of a hill 660 feet above the railway and the city, and becomes a peculiar form of perpetual motion as viewed by the outward manifestations. There are now eight wells in this district producing about 500 barrels per day.

Mr. Chandler has also organized another company to operate east of the Puente district, about six miles north of Anaheim, where several wells are being sunk. The largest yield of any is to the extent of fifty barrels per day, but no deep wells have yet been made. Deeper wells will doubtless give a copious yield.

The whole yield of the Ventura and Los Angeles County wells is about 2,600 barrels daily, but the work of development is but scarcely begun. When the great oil-fields of Sespe, the Simi, the Brea, San Fernando, Puente, Rodeo de las Aguas, Chandler District, and the City Oil Springs have been opened to proper depth, the yield of oil and gas will be counted by millions of dollars. A large portion of the oil is used in its crude state as a lubricator of machinery and as fuel, both of which purposes it fulfills to perfection.

With good machinery and intelligent skill thousands of oil-wells can be sunk in the coast counties of Southern California. The demand for the oil is increasing daily in the various branches of human industry, and it is every day becoming more indispensable for use in the arts and sciences. It is seldom that a well is sunk that yields no oil. "Dry

wells" are seldom seen in the oil-belt of Southern California.

The asphaltum deposits of this portion of the State are immense and of vast importance in value. These deposits are steadily increasing in volume so that no fear need arise of a lack of supply. This substance is used for pavements of streets and sidewalks, for lining reservoirs and conduits of water, for fuel, for the manufacture of paints of every hue, candles, chewing-gum, balsams of great value, for distilling into oil, for illumination, and for the manufacture of gas.

The development of these two great resources is steadily going forward with increasing success. Ample capital is now being employed to produce, transport, and refine these products. Iron pipe is laid from the Puente wells to the Southern Pacific Railway, to which oil is carried by gravitation, and in such quantity as to load a car of one hundred barrels in ninety minutes. The oil-cars are now made in the form of round cylinders from heavy boiler-iron, and are strong and almost indestructible.

From the San Fernando wells the oil is carried in a pipe to Newhall station and refinery, on the Southern Pacific Railway, and also down the Santa Clara Valley to the sea, at the ports of Hueneme and San Buenaventura, where the oil is carried into vessels made to carry it in bulk. The oil from Santa Paula is conveyed in the same way to Newhall and to the sea. By the use of these pipe-lines the friction of transportation may be considered nil.

The amount of capital invested in the business of production and development is about $3,000,000, and is represented by the Pacific Coast Oil Company, Sespe Oil Company, California Star Oil-Works Company, Mission Transfer Company, Chandler Oil Company, and the Puente Oil Company. Some of the leading spirits in prosecuting this great work are Hon. C. N. Felton, Hon. D. G. Scofield,

Lloyd Tevis, President of Wells, Fargo and Company, Hardison and Stuart, Burdett Chandler, W. R. Rowland, and Wm. Lacy. They represent millions of capital, and will carry on the great work in which they are engaged with intelligence and untiring zeal.

ORANGE-CULTURE IN SOUTHERN CALIFORNIA.

By WILLIAM A. SPAULDING,

OF THE EDITORIAL STAFF OF THE LOS ANGELES "DAILY TIMES"; AUTHOR OF "THE ORANGE: ITS CULTURE IN CALIFORNIA."

Citrus-culture in Southern California has attained great popularity and great success. The orange and the lemon are not indigenous to this country; we have no native groves of the Bigarade (sour orange) like those of Florida, nor thickets of sweet oranges like those of Central America and portions of Mexico, but we have a soil and climate in certain favored sections, which are well adapted to this fruit, under cultivation. The one artificial condition necessary in order to command success is to supply the requisite moisture. This is accomplished by irrigation. There are lands here perennially moist by reason of the underflow and the close proximity of water to the surface; but they cover the sections of greatest depression and both their atmosphere and soil are found to be too cold for the orange and lemon. Hence our cultivators have sought the high, warm lands of the interior valleys and of the foot-hills aligning the mountains in the south, and here, combining equability of temperature, a genial soil, and sufficient moisture, they have achieved the most satisfactory results.

Perhaps it is really no disadvantage that citrus-culture

must be pursued here, if at all, under these certain artificial conditions. Orange-growing is thus taken out of the domain of a hap-hazard occupation, and made one of the sciences. Without a degree of care the tree can not be grown in Southern California and without *good* care and strict conformity with its requirements it can not be made profitable. The rewards, therefore, all lie in the line of careful culture, and the law of the survival of the fittest is always operative.

The orange-orchard that ranks up to standard is well located as regards climate, soil, and water-supply, and it is cultivated and pruned with nicety and closely watched in order that it may be kept free from insect pests and other enemies. Grass and weeds are not allowed to gain even a good foothold in the best-tended orchards, and the surface of the soil is kept pulverized the year round to conserve moisture. During the past five or six years the accepted area of California's citrus-belt has undergone some important modifications. In the southern counties—Los Angeles, San Bernardino, and San Diego—the limits have been narrowed rather than broadened. This has been due principally to two causes: First, the subdivision of many orange-growing districts into town lots and their settlement for residence purposes. Second, the discovery that many localities formerly planted in citrus-trees are capable of producing only mediocre fruit, and that they are therefore not highly remunerative for orchard purposes.

In these years the center of orange-production has shifted farther from the ocean, occupying more and more the warm interior valleys and the foot-hills. At the same time people in more northern sections of the State have discovered that they have some warm, sheltered ranches and valleys where citrus-trees thrive, and they have been industriously engaged in planting orange-trees. To this extent, at least, the area of citrus-culture has been broadened.

Whether the more northern locations are capable of producing oranges in commercial quantities at a profit to the cultivators remains to be demonstrated. Unfortunately, there are no well-authenticated statistics of recent date to show the extent of the citrus industry in California.

Since the year 1884–'85, county assessors have not been required to make specific returns of the numbers of bearing trees and vines in their respective counties, and, owing to this unpardonable oversight, there are no reliable statistics on these important matters. Some of the best-advised horticulturists, however, agree in the following approximate estimates:

COUNTY.	No. of bearing orange-trees.	No. of bearing lemon-trees.
Los Angeles	300,000	25,000
San Bernardino	250,000	5,000
San Diego	50,000	5,000
Santa Barbara	25,000	2,500
Santa Clara	10,000	500
Sonoma	5,000	500
Ventura	2,500	1,000
Yolo	2,500	.....
Butte	5,000	1,000
Scattering	5,000	1,000
Total	655,000	41,500

With the new orchards coming into bearing, it is probable that by 1890 California will have 1,000,000 bearing orange-trees. Lemons, as will be seen from the figures above, are not in such favor as oranges, and, if the number of bearing lemon-trees reaches 50,000 in 1890, it is all I anticipate.

The production of limes, citrons, and other fruits of the citrus family is merely nominal. Athough these varieties flourish in the more favored localities, they have not as yet been found very profitable, and hence their production has not been encouraged.

It is a difficult matter to present in business-like form the profit and loss account of orange-culture in Southern California. It is a great industry, scattered and diversified. In one instance—pursued by a shiftless cultivator, or in an illy-adapted locality, or lacking in other ways essential conditions of success—it may be a losing business. Again, with moderately favorable conditions, it may pay a small profit. And still again, with every circumstance in its favor, including a favorable turn in the market, the profit may appear prodigious. It would not be fair to cite either of these cases as illustrative of general results. It would not be fair even to strike an average of the three. Yet, somewhere between the extremes a fair generalization is to be found. Reasonable excellence is, after all, a fair criterion. Let us incline toward results obtained from right conditions, careful culture, and fair markets. Such results anybody can attain if he observes established methods.

It is a matter of record that some of the early cultivators realized profits which seem fabulous. Governor Downey says of Don Luis Wolfskill: "He lived to enjoy his oranges for twenty years, and they gave him, some seasons, an income of a thousand dollars per acre. The last crop disposed of in his lifetime, from about twenty-eight acres, sold on the trees for $25,000." The Don's sons and daughters, grown to mature years, still enjoy a princely income from the estate.

Six or seven years ago the profits of orange-culture ran up to marvelous figures. In a speech delivered by Mr. J. de Barth Shorb to a public body, that gentleman stated that a single acre of Colonel B. D. Wilson's older orange-groves yielded nearly $1,800 in one year, a fact which can readily be believed when single trees have been known to net $60 or $70, and when from 60 to 80 trees are planted to the acre. Three years ago Mr. Dalton netted $800 from

a quarter of an acre planted in orange-trees of a fine quality and of mature growth.

In these times of increased production and lessened prices I do not know that any cultivator claims to equal the old Don's profit of $1,000 per acre, or Colonel Wilson's $1,800. But it has been not unusual for a grower to clear as much as $500 an acre. In the season of 1882–'83, one producer in the San Gabriel Valley sold his crop on the trees for the lump sum of $23,000. This from about forty acres of orchard.

Owners of mature orange-groves realize at present prices anywhere from $250 to $500 an acre net a year, the amount depending upon the quality and quantity of fruit, favorable markets, etc.

It is estimated that the total orange-product of the State for the season of 1887–'88 will approximate 2,500 car-loads. This, at 300 boxes to the car-load, would give a total of 750,000. An average of one dollar per box net would make a gross return to the State of three quarters of a million of dollars. An industry of this magnitude deserves to rank among the most important of the State.

From a recent treatise on the orange in Southern California, I am permitted to make the following extracts descriptive of the characteristics of the tree:

"The orange-tree, compared with many other trees that are adapted to a sub-tropical climate, is of slow growth. It requires about sixteen years for the seedling to attain what might be called its full normal proportions. It then stands about twenty-five feet high, with a spread of branches of about the same distance, and a circumference of trunk, near the ground, of nearly three feet. The seventy-year-old orange-tree of the Mission Orchard, San Gabriel, which I measured, showed a girth of forty-two inches. The inference is fair that, between the ages of sixteen and seventy, it had increased its circumference of trunk only six inches. As the orange-tree attains its maturity, its cylindrical trunk changes to one of

eccentric longitudinal corrugations, although, if healthy, the bark still remains smooth.

"The size of budded trees varies so much from the standard seedling that I do not attempt to canvass the matter in this article. There are dwarf, semi-dwarf, and standard buds, all of which follow their respective habits when set upon a seedling stock, and make trees from five to twenty-five feet in height, according to the characteristics of the bud.

"The wood of the orange-tree is close-grained, hard, and susceptible to a fine polish. It is of a clear, yellow color, embodying a suggestion of the fruit itself. The top of the tree contains another suggestion of the fruit, for, if allowed to take its natural bent, with little pruning, its contour is almost spherical, like the orange.

"The leaves are ovate in form, slightly serrated, and of thick, leathery texture. When newly forming they are of a bright yellow hue, but as they mature they change to a dark green, with the upper surface presenting a decided gloss. The tree is an evergreen, and it has numerous seasons of growth during the year, with slight dormant intermissions. I once took careful note of a tree at my place, with the following result: On the first of January there was a little new growth already formed. This made some progress during the month, and hardened up about the middle of February. In April another growth began, and matured in May. About the middle of July the third growing period commenced, and this time the tree made more wood than in both previous growths combined. By the last of August the yellow leaves had all turned to their normal shade, and the stems were hardened. In October there was a slight growth. In December the shoots started again, but this was the same growth that I had noted at the beginning of the year. Thus I found four distinct growing periods. It is not unusual for trees to make even five growths in a year under favorable circumstances, while with retarding causes they may make only one or two. The times of starting and maturing may also vary almost a month, according to circumstances of irrigation, cultivation, temperature, etc. The dormant periods of the orange-tree may be generally defined as follows:

"The middle of March to the middle of April.

"The month of June.

"The month of September.

"The middle of November to the middle of December.

"The orange-tree blossoms early in February, and continues in flower until the last of March. The blossom is a pure white, of the most exquisite texture, and its fragrance is so great as to be almost surfeiting. As a typical flower, twined into a wreath to surmount the head of a bride, nothing could be more delicately suggestive of beauty, purity, and sweetness. But those who have observed the orange-flower only in the conventional bridal wreath have seen but a poor counterfeit presentment of the real blossom.

"The fruit sets in February or March, and attains its maturity one year thereafter, when the tree blossoms again. At the time of blooming one may see it loaded with its golden fruitage and dazzling with bloom. The contrast of these colors with the dark green of the foliage forms a most enchanting picture. The tree is itself a bride, clothed in satin emerald, crowned with a snowy wreath and decked with precious jewels.

"The orange clings to its stem with great tenacity, and it is not unusual to find fruit of a former year's growth still on the tree when a second crop is attaining maturity. The quality deteriorates, however, if it is allowed to remain long after maturity. In time the juice is absorbed entirely, leaving the pulp a dry, spongy mass.

"Concerning the capacity of production, there is great variance. Mr. H. M. Beers has the largest tree in Riverside. It is seventeen years old, and the trunk measures three feet in circumference, or nearly twelve inches in diameter. At the age of nine years it bore about half a dozen oranges; at eleven years it bore two thousand; at thirteen years it bore two thousand two hundred and fifty; at fifteen years it bore four thousand; at seventeen years, which brings it to the present season, it contains, according to estimate, four thousand. Not every orange-tree presents such a record as this, however.

"The orange-tree revels in a high temperature. In fact, very warm weather is essential to the raising of good fruit. It is not sufficient that the warm weather occur in summer, but a high average must be maintained in winter as well, and the extreme should never fall below a certain point. This point may be placed at 23° above zero Fahr.—9° below the freezing temperature. A cold

spell that reaches this extreme will destroy young orange-trees in nursery, and nip the tender growth of older trees.

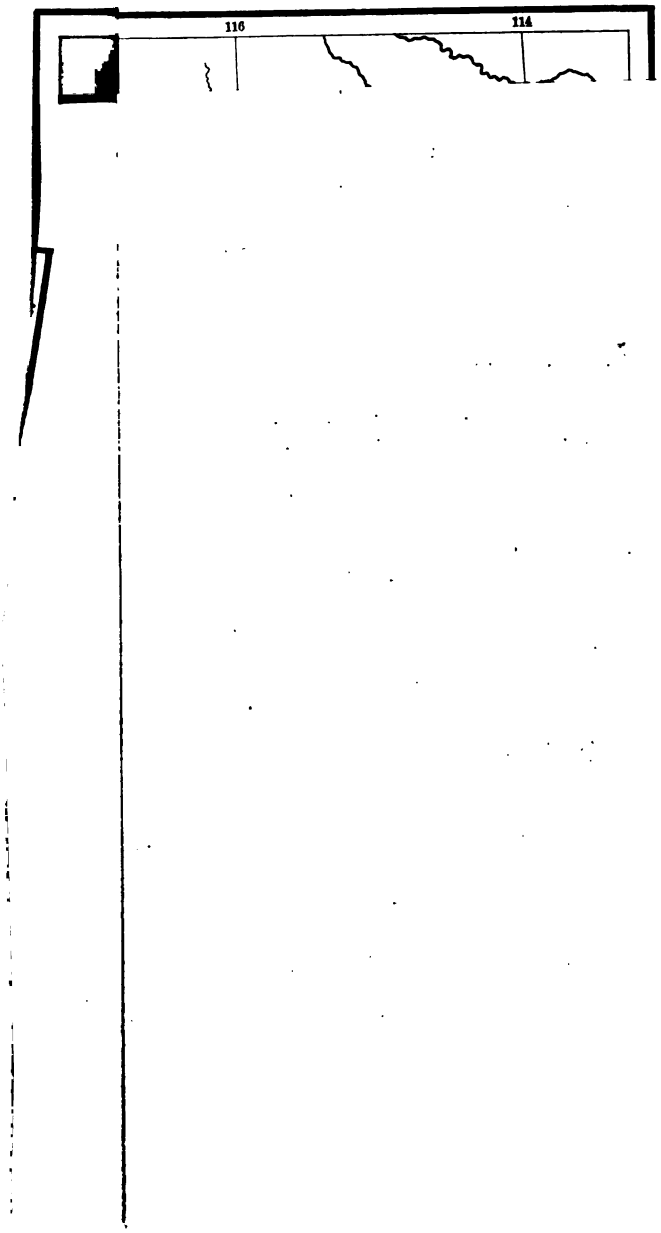
"While the full-grown orange-tree will survive a good deal of cold weather, and is not destroyed by the extreme above named, it may still be set down as a safe proposition that the less frequently the thermometer goes below the freezing-point (32° above zero) the better it is for both tree and fruit.

"The orange is long lived. An instance is on record of a tree in Italy living to the age of four hundred years. But that was with the most careful treatment, through successive generations, with repeated renewals of the soil. As we grow the orange-tree in the open air, with a minimum of attention, a century would probably be its full span. But a hundred years is a long time to exist on this earth, and after such a life of usefulness, if there is any better vegetable kingdom elsewhere, the orange-tree ought to be allowed to go there."

Most of the bearing orange-groves of Southern California are of seedling trees, the fruit being of fair quality, with a somewhat thicker rind than the oranges of Florida, Mexico, and Mediterranean countries. Within the past six or seven years, however, the tendency of planters has been strongly toward budded varieties. They come into profitable bearing within from four to five years after planting. Popular sentiment is now practically settled in favor of the Washington navel, a strongly-marked fruit with a little protuberance (sometimes containing an aborted orange) in the blossom end. The navel orange possesses a thin skin, few or no seeds, tender pulp, and a high, winy flavor, which gives it precedence over all other varieties, budded or seedling, grown in Southern California. Of orange-trees planted now-a-days it is safe to say that three out of five are of the Washington navel variety. This orange originated in Bahia, Brazil, and was imported in 1873 by the Department of Agriculture at Washington.

It is not expedient in a paper of the limits allotted to this to enter into a discussion of the methods of propa-

gating, budding, cultivating and caring for citrus-trees as pursued in California. The object has been to give a general, comprehensive view of the industry. Should any reader become sufficiently interested in the subject to wish to inform himself of its practical details, he can procure the required information from books especially devoted to citrus-culture.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APPENDIX.

THE PUBLIC SCHOOLS OF SOUTHERN CALIFORNIA.

By Hon. JOHN R. BRIERLY, of Los Angeles,
CHAIRMAN OF THE COMMITTEE ON EDUCATION OF THE HOUSE OF REPRESENTATIVES OF THE STATE OF CALIFORNIA.

The public schools of Southern California are a part of the public-school system of the State, and no State has provided more liberally for the education of her children.

To describe the work of the public schools of the counties of Los Angeles, San Bernardino, San Diego, Santa Barbara, and Ventura, without a preliminary statement of what the California system of public schools has done, and is doing, for the education of the people throughout the State, would be practically impossible.

The public-school system of California provides free schools from the primary school to the grammar school, and thence to the high schools of the cities and large towns, the three State normal schools, or the State University at Berkeley, near Oakland.

The first California State normal school was organized in San Francisco in 1862, and occupied rooms in the public-school buildings of that city until July, 1871, when it was removed to San José, where it now occupies a building erected by the State that cost $150,000.

In 1881 the Legislature appropriated $50,000 for the construction of a State normal-school building in Los Angeles, and in August, 1882, the school was ready to receive pupils.

In 1887 the State appropriated $50,000 to construct a building

for a State normal school in the northern part of the State, and within a year the third State normal school will be opened in Chico, Butte County.

The normal school in Los Angeles had 278 pupils enrolled in the school-year ending June 30, 1887, and there were 48 graduates that year.

There have been from May, 1884, to June, 1887, seven graduating classes and 148 graduates from the normal school in Los Angeles.

The primary and grammar schools of the State of California derive their support from various sources.

There is a permanent endowment, invested in interest-bearing bonds of the State or counties, of $2,527,500, that produced an income of $146,458.72.

The poll taxes, amounting to about $300,000, and the interest upon deferred payments upon State school-lands, amounting to about $40,000 annually, are also placed in the State school fund.

The State also provides for a direct tax upon all the property of the State for the support of the public schools, and for twelve years has levied $1,300,000 annually for that fund. At the session of the Legislature in January, February, and March, 1887, the Assembly, with only four dissenting votes, passed a bill providing for a permanent levy of twenty-five cents on each one hundred dollars of property in the State for the support of the public schools.

The Senate did not act upon the bill, but a similar bill will no doubt become the law of the State at the next session of the Legislature in 1889.

Such a levy will produce $2,000,000 annually, and the amount will increase with the growth of the State.

The bill providing for a permanent tax-levy for the public schools having failed to become a law, the Committee on Ways and Means in the Assembly embodied in the general tax-levy bill an increase from $1,300,000 to $1,500,000 annually for the levy for the support of the public schools, and an amendment was offered by the Chairman of the Assembly Committee on Education to increase the amount of the levy for the support of the public schools from the amount heretofore levied, $1,300,000 annually, to $1,600,000 for the fiscal year ending June 30, 1888, and to $1,800,000 for the school-year ending June 30, 1889.

The amendment was adopted with no particular opposition, and is now the law of the State. The liberal appropriations by the State to support the public schools are, by law, limited to only two items of expenditure—salaries of teachers and purchase of school libraries.

The library fund consists of ten per cent of the State fund annually appropriated, unless ten per cent exceed fifty dollars, in which event it consists of fifty dollars annually in each school district. In cities not divided into school districts, the library fund consists of the sum of fifty dollars for every one thousand children between the ages of five and seventeen years residing in the city.

In each county of the State the board of supervisors must, annually, at the time of levying other county taxes, levy a county school-tax, the maximum rate of which must not exceed fifty cents on each one hundred dollars of taxable property in the county, and the minimum rate must be sufficient to raise a sum equal to three dollars for each child between five and seventeen years of age residing in the county.

The school districts are governed by boards of trustees, of three members, who hold office for three years—one trustee being elected on the first Saturday in June in each year. Vacancies in the office of trustee are filled by appointment, by the county superintendent of schools, until the next succeeding annual election, when a trustee is elected for the unexpired term.

The disbursement of the school funds is practically controlled by the boards of trustees in districts and boards of education in the cities.

Should the trustees deem the revenue of the district, from the State and county school funds, insufficient to support the school and provide the sites, buildings, and furniture needed in the district, they may call district elections and submit the question to the qualified electors whether district taxes shall be levied or school-district bonds shall be issued.

A majority of the electors may decide whether taxes shall be levied upon the property of the district, such taxes not to exceed seventy cents on each one hundred dollars for building purposes, and thirty cents on each one hundred dollars to furnish additional school facilities, or to maintain the schools in the district, in any one year.

School-district bonds may be issued by districts, under authority

of a law enacted in 1881. The trustees of any district may submit the question to the electors of the district whether bonds of the district shall be issued and sold for the purpose of purchasing school-lots, of building school-houses and furnishing them, or for liquidating the indebtedness for school-houses already erected.

The amount of the bonds must not exceed five per cent of the taxable property of the district; the rate of interest must not exceed eight per cent, payable annually, and they must be paid in not more than ten years from the date.

When two thirds or more of the qualified electors of a school district, voting at an election called by the board of trustees, decide in favor of issuing school-district bonds, the board of trustees report to the board of supervisors of the county the amount of bonds to be issued, the time when the bonds shall be payable, and the rate of interest upon the bonds.

The issuing of the bonds, the collection of taxes to pay the interest and principal of the bonds, and such further action as may be required, are controlled by the board of supervisors of the county.

Having seen that the revenue for the support of the public schools is derived from the interest on bonds in the State treasury, the interest on deferred payments upon school-lands sold by the State, the poll-taxes, and direct taxation, all forming the State school fund; from direct taxation in the counties, and from direct taxation or school-district bonds in the school districts, an examination of the statements of receipts and expenditures for the support of the public schools during the school year ending June 30, 1886, will show how faithfully the people of California have performed their duty in providing for the education of all the children of the State.

The receipts and expenditures were for the support of the primary and grammar schools; with this exception, four thousand and ninety pupils were enrolled in the high schools in the State, and parts of the city and school-district taxes were used to support the high schools.

The State normal schools are supported by appropriations from the general fund of the State. The State University is supported by income from endowments, that have been invested in bonds to the amount of $1,363,500, from sales of land, and from a permanent levy of one cent on each one hundred dollars of the taxable property of the State, which will produce about $100,000 annually.

The receipts and expenditures shown in the following statements are for the school year ending June 30, 1886, being the latest statistics report to the Legislature:

Receipts.

State school fund	$1,884,065 07
County taxes	996,703 22
City and school-district taxes	694,001 64
Miscellaneous sources	138,596 48
Total	$3,713,366 41

Expenditures.

Teachers' salaries	$2,710,621 82
Rents, fuel, and contingent expenses	422,843 30
Sites, buildings, and furniture	283,006 18
School libraries	64,627 32
School apparatus	24,833 01
Total	$3,505,931 63

The valuation of school property was as follows:

Lots, school-houses, and furniture	$7,782,985 00
School libraries	441,303 00
School apparatus	202,899 25
Total	$8,427,187 25

There were 186,127 pupils enrolled in the public schools, of whom 4,090 were in the high schools, 48,515 in the grammar schools, and 133,522 in the primary schools.

There were 4,434 teachers employed, 1,128 men, and 3,306 women, who received average wages of $79.97 a month paid men, and $65.89 a month paid women.

The counties of Los Angeles, San Bernardino, San Diego, Santa Barbara, and Ventura, in the school year ending June 30, 1886, were in the front rank of the counties of the State in the army of education.

There were enrolled in the public schools of the five counties 22,267 pupils—157 in the high schools, 3,774 in the grammar schools, and 19,336 in the primary schools.

For the support of these schools the receipts and expenditures were as follows:

Receipts.

State school fund	$211,082 05
County taxes	129,959 48
City and district taxes	111,130 52
Miscellaneous sources	96,677 50
Total	$548,849 55

Expenditures.

Teachers' salaries	$288,812 66
Rents, fuel, and contingent expenses	43,870 44
Sites, buildings, and furniture	112,630 78
School libraries	8,553 91
School apparatus	2,908 82
Total	$456,776 31

The valuation of school property in the five counties was as follows:

COUNTY.	Lots, school-houses, furniture.	School libraries.	School apparatus.	Total.
Los Angeles	$440,665 00	$21,500 00	$5,563 00	$467,728 00
San Bernardino	115,300 00	7,300 00	2,290 00	124,890 00
San Diego	57,650 00	6,735 00	1,357 00	65,742 00
Santa Barbara	83,550 00	6,590 00	2,854 00	92,994 00
Ventura	42,405 00	3,450 00	1,630 00	47,485 00
Total	$739,570 00	$45,575 00	$13,694 00	$798,839 00

There were enrolled in the public schools 22,267 children—157 in the high schools, 3,774 in the grammar schools, and 19,336 in the primary schools.

There were 509 teachers employed—158 men and 351 women.

The average wages paid teachers in each county was as follows:

COUNTY.	Men.	Women.
Los Angeles	$83 33	$73 75
San Bernardino	76 66	63 64
San Diego	67 42	62 00
Santa Barbara	75 00	62 00
Ventura	74 40	60 00

With the condition of the public schools of the State and of the five southern counties shown by the preceding statistics, California is prepared to welcome all who desire to find homes where education is honored and nurtured, where free schools are maintained from the primary grades to the State University, and where none need be uneducated but those who believe that "ignorance is bliss."

PROFITS AND METHODS OF FRUIT-RAISING.*

By MILTON THOMAS,

FRUIT-GROWER, LOS ANGELES, CALIFORNIA.

I SHALL take up the subject of horticulture in the broadest sense, making it include all the fruits that grow and do well on this coast.

FRUITS IN OLDEN TIMES.—In taking a retrospective view of the various fruits that were grown in California in 1849 and 1850, we find there were only a few kinds, and those of inferior varieties except grapes and oranges. The Mission grape was about the only foreign variety grown at that time in California, and it was considered quite a luxury to the miners and others who came here at that time. It is still a good grape, but since that time there have been introduced from Europe very many other varieties that excel. In the same years there were a few orange-trees grown in Los Angeles County. I remember in 1869 being shown a few old trees, at the old Mission San Gabriel, that were eighty years old, still in a good state of preservation, and bearing well. These old orange-trees and the Mission grapes, introduced by the Catholic fathers probably over a hundred years ago, proved a success, and led to others being planted, and we are indebted to-day to these Catholic fathers for these fruits. There are also old seedling pear-trees at the Mission over a hundred years old. The first grafted fruit-trees were brought to California in 1851, 1852, and 1853. Fruit-trees at that time were one dollar apiece, and the fruits were sold from one

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* Read before the Los Angeles County Pomological Society.

to two dollars per pound. But this was in the golden days of California, when mining was the principal industry, and men made ten, twelve, and sixteen dollars per day. As time passed there were more fruit-trees planted, nurseries established, and the price of trees and fruits diminished, and before railroads reached our coast the price of fruit was not remunerative, and orchardists lost their interest in fruit-raising, and it was some years before fruit was shipped East with profit.

Porter Brothers, of Chicago, commenced to ship fruit East in large quantities several years ago; then others commenced. Finally, a thousand or more car-loads of green fruit were shipped in a year. It was not always a success, especially if the market was glutted, or the fruit was received in poor condition. The freight per car was six to nine hundred dollars, whereas now it is but two to three hundred dollars; so you can see that the fruit-industry in the past was not always profitable.

Fruits at Present.—We find at the present time it promises to be one of the leading industries in California. There is no country in the world that can compete with us when we take into consideration the great variety of fruits we can grow to perfection. Let us contrast the countries that produce tropical and semi-tropical fruits. Can they produce apple, pear, peach, apricot, nectarine, prune, plum, etc., and other fruits and nuts that we can produce in such quantities, and the quality being first-class? We say no; not by any means. We produce the best of semi-tropical fruits, and our deciduous can not be excelled, taken as a whole. We see growing in the same orchard orange, lemon, pear, apple, peach, apricot, walnut, almond—also the strawberry and other small fruits, as well as the best foreign grape that grows anywhere, with more tons to the acre than any other portion of the world. We defy the world to excel in quality or quantity. Our peaches can be used for drying, and command good prices. Evaporated peeled peaches command fancy prices. In this connection allow me to allude to a cheap and novel way to peel peaches. Simply put the peaches in a weak lye, and let them remain in it about a moment, and the skins will slip off by plunging them into cold water. This being such a simple process every one should try it. Now, as to canned peaches, there is a good market in the East and Europe; besides, vast quantities are consumed in Great Britain. There is no question but what

there will be a good and certain market for all peaches that can be produced in California.

Then next let us consider the apricot, which is one of the best of fruits. Eaten when ripe it is delicious, and can not be surpassed in flavor. It is most conducive to health, and on account of its acidity is in great demand in cold countries and on shipboard, especially on long voyages. Canned apricots will always be in demand. The dried apricot is perhaps the best dried fruit we have. The evaporated apricot commands the highest prices in the best markets of the world. There is one thing, perhaps, which is not generally known, that there are but few places in the world where the apricot can be produced. California is the best apricot-producing section known. Taking the apricot in its various uses, it is perhaps one of the best-known fruits. There are few people in the world who have not tasted this luscious fruit.

The nectarine is a fruit especially good for drying or canning. It usually does well in California wherever the peach succeeds, that is, the red or colored nectarine. The white or light-colored nectarine is a shy bearer. The nectarine promises well, and in the future may be a good fruit to raise.

I will allude to the English walnut as being very profitable. There are several walnut-groves in Los Angeles County which have netted their owners two hundred dollars per acre the past year. The walnut requires good, deep, rich soil, and but little pruning and irrigating. The English walnut comes into bearing in about ten years, and the soft-shell at about six years.

The almond is a tree that grows well, and under certain conditions is profitable. In order to have trees bear well you must plant different varieties close together, in order that the different varieties may fertilize each other when in bloom. This experiment has been tried in different localities in the State, and the result has always proved satisfactory.

I now wish to call the attention of those intending to plant the cherry to the fact that they require no irrigation. The branches should be allowed to grow out at about a foot from the base of the tree.

PRUNING.—As to pruning apple-trees, suppose you plant one-year-old trees. After they are properly planted, cut back to three feet in height, then allow the tree to send up shoots above eighteen

inches, and rub off all below. Let the branches start all round the tree in the form of a pyramid. Second year, cut back say one half; third year, the same, and after that, less. Keep all suckers and superfluous wood thinned out, so as to admit sunshine. Pear-trees require more pruning; cut back the same as apple, only more vigorous pruning is necessary, cutting back, say, two thirds year after year, and endeavoring to make the branches stocky, so that they will not break. The apricot requires still more pruning, as it is a wonderful grower, and it must be cut back three fourths to five sixths, thus allowing the small twigs to remain on the trees to bear fruit. The apricot requires vigorous pruning each year. The peach does not require so much pruning; cut back some the second year and keep all new wood cut away that grows out from the base; in fact, keep all brush out, and keep the tree in symmetrical shape. This same rule applies to nectarines as well. Walnut and fig trees require little pruning. In this connection let me urge every one to plant one-year-old trees, and to prune vigorously when first planted, remembering, the more you prune the better your trees will grow.

Soil.—Apple, cherry, pear, and walnut trees need the best soil; peach, plum, prune, and nectarine will grow in soil more sandy, also orange and lemon trees. Small fruits do well in sandy soil, but be it remembered that all trees do better on rich soil, but some do better on a lighter soil than others.

Irrigation.—Orange-trees require irrigating regularly, say, while young, and before they come into bearing, once every two months in the dry season, and every four to six weeks after they come into bearing. Lemons require but little water, about twice during the dry season. Deciduous trees do not require irrigating in ordinary seasons and under ordinary circumstances.

Planting.—Before planting plow the land eight to twelve inches deep, or deeper if you can afford it. Harrow and pulverize the land thoroughly. Dig the holes about twenty inches deep; place the roots in and spread them out, and when filling the hole put the top earth in at the bottom and *vice-versa*, and press the soil firmly until the tree will stand erect, and if you have the water irrigate the trees so as to settle the soil around the roots. In some localities where the atmosphere is dry, trees require more irrigating. Now, as to distance apart to plant trees, twenty feet apart will answer every kind of tree except orange, apricot, and apple, which

should not be less than twenty-five feet. English walnuts, forty feet; almonds, twenty-five feet; blackberries, raspberries, currants, and gooseberries should be six feet apart; strawberries, two to three feet. Grapes of all kinds will produce more tons per acre, after six years old, if they are planted ten feet apart, than if they are nearer. I wish to emphasize this as a fact that can be and has been demonstrated.

Now, there is one thing I wish to refer to, and which I deem of great importance, and that is thinning out the fruit on fruit-trees. No fruit should be allowed to grow nearer than three inches to each other, and all small and defective fruit should be picked from the tree.

THE RAISIN INDUSTRY.—Let us now glance at the raisin industry as being one of great importance, and which has perhaps the greatest outlook for the future of any other. The possibilities of this industry are beyond anything we can conceive of. Some twelve years ago there was an attempt to make raisins, but it was not a success—as is usual in all new enterprises. There were many discouragements met with by those who were interested in this enterprise. There was a prejudice, in the East, and at home, but there has been a steady increase in flavor and output, and California raisin-makers have used every precaution to make their raisins palatable as well as attractive to the eye. Wrapping, packing, and boxing, and, in fact, everything connected with this industry is well done. The many difficulties encountered have been boldly met and overcome. We have a climate preferable to that of Spain, and in the near future we will supply the demand for first-class raisins. If California raisin-makers will keep on in the same ratio, in the future as in the past, making improvements in flavor as well as general attractiveness, they will be able to successfully compete with any raisin made in Spain or elsewhere.

Small grape-growers find it to their advantage to sell their raisins in the sweat-boxes to those who have made a reputation for their brand. We perceive that the output for raisins has steadily increased. In 1881, 90,000 boxes; 1882, 115,000; 1883, 125,000; 1884, 175,000; 1885, 475,000; 1886, 703,000. We have the following brands, and most of them are very fine: the "Forsythe," the "Coleman Flag," Riverside Packing Company; McPherson Brothers, the "Austin" brand; and George W. Meade, the "Lion"

brand. These different brands have sold side by side in New York, Boston, and Philadelphia with the imported raisins from Malaga and compared very favorably, and the merchants were loud in their praise of the California raisins. There is another advantage that California has in her raisins that they do not deteriorate after the 1st of April. The Malaga profits in producing and making raisins are sufficient to satisfy almost any one. One to two hundred dollars per acre ought to be sufficiently remunerative to the raisin-maker. The variety of grapes used are mostly Muscat and a few Malagas, some Sultanas, a seedless grape, are used.

In 1884 there were imported to the United States over 53,000,000 pounds of raisins. Now, we will notice briefly that the Malaga raisins come from Malaga, a small province of Spain, on the Mediterranean Sea. It has an area of 4,729 square miles, and its surface is mountainous, being traversed by the range of Sierra Nevada, and only a part of Malaga is used to produce the Malaga raisins. A part of the grapes are used for wine-making. Let us see what they pay laborers for making raisins: For men, twenty-five to thirty cents per day and board; women, from twelve and a half to twenty cents and food furnished. In packing, men get fifty cents per day, and women twenty-five to thirty cents, and furnish their own food. One American would do more in one day than these would do in three. Now we will contrast the yield of our vineyards with those of Malaga. Our vineyards in full bearing yield from eight to ten tons per acre, and in Malaga less than two and one half tons—four pounds to each vine, one and one fourth pounds of raisins to each vine. The seasons in Malaga are uncertain. In 1884 it rained two days in September and seven days in October. This year it rained one day and two nights. The principal grape they grow for raisins is the Muscatel, the same as our white Muscat of Alexandria, and it has been there from time immemorial. There are other places where raisins are made beside Malaga. There is a province near which makes an inferior raisin.

Canned Fruits.—The output of the canneries for 1886 was 659,950 cases of fruit, 22,005 cases of jams and jellies. Allowing forty-five pounds to the case, this equals a total of 30,000,000 pounds of canned fruits. The three leading fruits continue to be apricots, peaches, and Bartlett pears for canning. The put-up for 1886 being 200,000 cases, against 110,000 for 1885, of apricots;

130,000 cases of peaches in 1886, against 70,000 for 1885, and of pears 120,000 cases against 80,000 for 1885; 270,000 more cases of canned fruit were put up in 1886 than in 1885, and are mostly sold, and good prices paid for the fruit.

CRYSTALLIZING.—I interviewed Mr. Benedict, of the firm of Barnard & Benedict Fruit Crystallizing Company. He said that all fruits can be crystallized. The best fruits for crystallizing are the orange, apricot, nectarine, cherry, fig, muscat grape, pear, and plum. For marmalades, jams, and jellies all the fruits just mentioned, except the cherry, may be used. The peach may be largely used for marmalades. Mr. Benedict also said that small fruits, such as blackberries, raspberries, strawberries, etc., may be used in any quantity and yet always find a ready sale at good prices. But of all the fruits grown in California the fig has the greatest future. We should at least supply the demand of the United States. I would advise growing the white varieties. There are annually imported from foreign countries vast quantities, which we should produce. Mr. Benedict further says that there is practically no limit to the amount of figs that can be disposed of at good prices, when prepared by crystallization, or dried in a manner to compare with the imported. The guava, he thinks, will become of great importance when properly cultivated. In the shape of jelly, it has largely been in demand among epicures, and in this way and in the shape of crystallization can be sold at good profits. These gentlemen have experimented with various fruits, and have succeeded in a way that is beautiful to the eye and delicious to the taste. The fig is prepared by this process, and the demand is wonderful. There was a firm in New York which ordered a sample, and, as soon as it was received and tasted, they ordered every few days by telegraph. A syndicate was formed, and they were going to order a car-load, but of course Messrs. Barnard & Benedict were not prepared to fill their order. Their crystallized apricots are perfectly splendid in taste as well as in appearance; also the pear and strawberry. Then the muscat grapes, when crystallized, are the best and most palatable of any. I can not in this allusion to this most important industry do justice to it. Barnard & Benedict have orders for the next season from every house that has already received samples. They have also a new process for drying apples that makes the product so far superior to the best evaporated apple that there is no comparison in appear-

ance or taste. Their jams, jellies, and marmalades, also sirups, are far superior to all others. What is the outlook for pears? Let us look at it for a moment. Just see the demand there is for pears in the East! First, our pears are far superior, and can be sold in the East some time before their pears are ripe. They can also be picked some time before they are ripe, and will ripen in ten or fifteen days, or about the time they arrive in the Eastern markets. Then our Bartlett pears are not only shipped East, but are canned, to a large extent, and are sent not only to the East, but to Great Britain and some to Europe and other countries; and, besides this, they can be dried and command fair prices.

They can be crystallized, and at present the supply is not equal to the demand at all.

In fact, there is no glutting the market if they are properly distributed and sold at a price that people can afford to give—not ten, twenty, or twenty-five cents a pound, but retailed to the consumer at six cents, which will allow the producer a fair price, pay the freight, and leave a margin besides.

PRUNES.—One word as to overproduction of prunes. There is no reason why California can not produce the 60,000,000 pounds of prunes instead of having to import them. A prominent horticulturist of San José, who has a large orchard of prunes, said he could raise prunes and dry them, all ready for the market, at five cents per pound, and make a net profit of $100 per acre. There is no immediate danger of it, but if the price is ever reduced to that figure, then, instead of there being a demand for those 60,000,000 pounds of prunes, besides what we already produce in California, there would be a demand at that price for 200,000,000 pounds. This holds good for all other fruits. If they are cheap, then there would be vast quantities consumed.

APPLES.—In regard to the apple, there is much to say. The origin of the apple is not known. It is mentioned in the Bible, but it was not the apple that we have to-day. Pliny says there were twenty-two varieties known to the Romans. We have several hundred varieties. Downing says, "The apple is the world-renowned fruit of temperate climates." The growth, size, and quality vary in different localities. Some apples are adapted to one locality, and in others will not succeed at all. The apple is better known than any other fruit, and, all things considered, is the best fruit

known. As a food it can be compared to bread and meat. Its use is conducive to health, and it can be used in various ways. Vast quantities of this fruit are consumed, furnishing a good and wholesome diet for the millions. In fact, it is hard to say too much about the apple as a food. The varieties of apples I would recommend are the following: White Winter Permain, Yellow Newtown Pippin, R. I. Greening, Ben Davis, Jonathan, Yellow Bellflower, Smith Cider, Fall Pippin, Skinner's Pippin, Early Harvest, and Red Astrachan.

VARIETIES.—Of peaches: I recommend Early and Late Crawford, Salway, Orange Cling, Lemon Cling, Golden Cling, Foster, Hale's Early, Alexander, Morris White, and Early Strawberry. Of apricots: Early Woodpark and Royal Hardivicke Nectarine. Pears: Bartlett, Winter Nelis, Beurre Hardy, Easter Beurre. Prunes: French and Hungarian. Plums: Damson, Yellow Egg, Green Gage. Washington Navel Orange, and Eureka Lemon. Kittattany blackberry. Cuthbert raspberry. Strawberries: Monarch of the West, Crescent Seedling, and Triumph of Cumberland. Table grapes: Muscat of Alexandria, Black Morroco, Black Hamburg, Malaga, and Rose Peru.

ORANGES AND LEMONS.—I see nothing to discourage any one from raising oranges and lemons. The cottony cushion-scale will be confined to certain localities and eradicated ultimately, if the people persevere with extermination. Our oranges come in when we will have no competition and the freights are being reduced. If they are properly distributed they will bring a good price; besides, our oranges stand transportation better than any other. If our oranges sell for remunerative prices that proves that we produce a good orange, as we have to compete with the best grown elsewhere. One dollar a box net will pay the producer. The Orange Growers' Union, which has been so successfully organized, will put $200,000 more money in the possession of the orange-growers than if there had been no organization effected. The same result will follow in the central and northern part of the State.

FRUIT-GROWERS' UNIONS are destined to be of incalculable benefit to fruit-growers of California, and also to dealers and consumers in the East. The fruit will be distributed so that no place shall be glutted. During the last year there were but few cities where our fruits were shipped, comparatively speaking; when our fruit is

properly distributed throughout the United States, then it will be demonstrated that we do not have one tenth the fruit to supply the demand. Our population is increasing about 1,000,000 a year, which means fruit for 1,000,000 more. In the next decade there will be 60,000,000 people. The more of our fruit that is consumed the more will be wanted. If those engaged in the fruit industry will eradicate the insect pests, take good care of their orchards, cultivate the very best kinds and varieties, they must reap a large reward.

We wish to particularly emphasize the importance of planting but few varieties. A great mistake is made by the majority in planting too many kinds. Then if the fruit is put up in an attractive manner there will be a market which will pay the producer a handsome profit, with a far better and pleasanter business than in any other legitimate enterprise. There is no business on the whole earth so ennobling, so refreshing, and so pleasant.

Now, in conclusion, let me ask this question: Is there any enterprise in California, or in any other country, that offers such certain paying profits as the fruit industry? Just notice it for a moment; notice the different possibilities there are in this great industry—green fruits, dried fruits, canned fruits, crystallized fruits, jams, jellies, marmalades, candied fruits. There is no industry to compare with it. It is a grand business to those engaged in it. The influence it exerts is salutory; it ennobles, refines, and makes people better.

What is there to discourage any one who wishes to engage in the fruit industry in California? Are there not 50,000,000 people on the other side to use our fruit? Is it not a fact beyond a doubt that there are millions of fruit-trees killed by the severe winters in the East, and horticulturists are discouraged there? In the first place, the orchardists have to wait eight or ten years for their trees to come into bearing, then to have them winter-killed. And suppose they replant; it is only a question of a few years, and they are again exposed to one of those severe winters, and most of the trees are again killed. I met a gentleman a short time ago from Ohio. He referred to a peach-orchard which he had, and he remarked that the winter of 1884–'85 killed the entire orchard. Can peaches, pears, plums, prunes, and apricots be produced in paying quantities there? No; not at all. There are some apples in all

States, but in many places they do not succeed well. Take Champlain County, Illinois, which a few years ago sent out of the county fifty thousand barrels. At present they send elsewhere for apples for home consumption.

THE PROFITS.—I refer to one hundred and fifty pear-trees that I sold to A. F. Kercheval, of Los Angeles, in 1881. He sold from these trees, according to his books, in 1881, $35 worth; in 1882, $100 worth; in 1883, $240 worth; in 1884, $300 worth; and, in 1885, $445 worth. These trees have not made a large growth, and some of them have been damaged by gophers. This is not a large yield, but a fair one. Some of these trees yielded seven and eight dollars' worth each this year. The last four years they have averaged $271 for these one hundred and fifty trees, on one and one half acre of land. These are facts which Mr. Kercheval will verify.

Let us look at the demand there would be for our grapes if the price in the East were fixed at six cents per pound. The producer can afford to raise grapes at $25 per ton, which is one and a quarter cent a pound; one and a half cent for freight, one and three quarter cent for the retailer, which is four and a half cents, with one and a half cent margin for contingencies.

There are six cities in California that will ultimately have cold storage, and that will take some of our surplus fruit. It is only a question of time till the cold storage will come into general use. Then we will appreciate having ripe fruit from December to June, the same as in July, August, and September.

California is sending apples to Australia, China, Japan, and other places; also canned fruit to the East, Great Britain, and Europe, also to other foreign countries. For some of our canned fruits, as well as dried, we have the world for a market. Only a few years ago Woodhead & Gay had a few barrels of foreign grapes sent to Los Angeles. These grapes were put up in ground cork, and were sold at thirty to fifty cents per pound in January and February. Now we raise better grapes, and instead of sending to Europe for grapes for winter use, we will supply that demand in the United States as well as other places. It is hard to say what new processes there will be to utilize our fruit. From June, 1884, to June, 1885, there were about $20,000,000 paid for imported fruits that California can produce and will produce in time. California canneries this last year turned out about 1,000,000 cans of goods,

and, as I have already said, 2,500 car-loads of fruit were sent East. Is this not a good showing? There were imported into the United States, in 1884, 7,945,977 pounds of figs, 57,000,000 pounds of French prunes, 4,732,269 pounds of almonds, 53,702,220 pounds of raisins; oranges and lemons, 18,626 car-loads; preserved fruits, 244 car-loads; olive-oil, 244 car-loads; and other fruits, 636 car-loads. If we could produce this fruit, it would take two fruit-trains each day in the year, Sundays excepted, with forty-two cars to each train, to take this amount East. Now, there is no question but what California can produce these fruits. Let me say, in conclusion, that the fruit industry of California is not even in its infancy. Within the next ten or twenty years this industry will assume proportions that will astonish the most sanguine. The orchardist will be more than rewarded and the railroad companies will be taxed to their utmost capacity to convey the vast quantities of fruit East.

People that are engaged in or expect to embark in the fruit industry should not expect such large returns. If horticulturists can make one hundred dollars per acre net profit, they should be satisfied. Let us contrast the profits of farmers with fruit-growers. If the farmer raises two thousand pounds of wheat or barley, and secures one and a half cent per pound, he is doing well, and goes home with his thirty dollars, and out of it he has twenty dollars net profit; but the fact is, the farmer does not get that average at all, considering the failures and partial failures he has. If the orchardist has an orchard of one hundred trees per acre, after they are eight years old he may reasonably expect two hundred pounds to the tree, which would make twenty thousand pounds. At three quarters of a cent per pound he would realize one hundred and fifty dollars an acre. This is a low estimate. The products of the orchard are almost a sure crop, especially if the orchard is composed of four or five kinds, say apples, pears, plums, peaches, and apricots.

TEN ACRES ENOUGH TO SUPPORT A FAMILY.*

By D. EDSON SMITH, Santa Ana, California.

I have been asked to present to you on this occasion some of my ideas as to "How to make Ten Acres Support a Family." To those who have only lived in large grain-growing and stock-raising regions, the idea of supporting a family on ten acres may seem absurd, but I believe the conditions are mainly favorable in this valley for a large number of families to be comfortably supported on ten acres each. Of course, ideas differ as to what constitutes a comfortable support, and much also depends upon the frugal habits of the partners who conduct the ten acres. What I mean is that the average man and woman, who have to earn their support by hard labor and economic habits, may go on to ten acres in almost any part of this or other valleys in Southern California, and live as well as the average farmer in other States who works his sixty, eighty, or a hundred acres. Of course, if the land is new the partnership should also have been of recent date, and the increase of family healthily grow with the growth of the trees and vines of the farm. With these definitions, I can say that I have practically solved for myself the problem of "How to make Ten Acres Support a Family."

In the first place, find out by examining the neighboring ranches what kind of trees and vines do best in your special locality; for this country is not like the vast country of Illinois and adjacent States, where corn will grow almost equally well in any portion of it. Here, a short distance often makes a great difference in what is best to plant. But this valley has now been so long and generally settled that with reasonable observation few mistakes need be made on this score. It was different when I came here five years ago. Then we had to "cut and try." I would not advise planting more than five acres to one kind of fruit, where you have but ten acres, because all fruits are liable to have their "off-years," and if the family support depended entirely on one kind, and that should fail

* Read before the Los Angeles County Pomological Society.

for two consecutive years, the family might be reduced to quite straitened circumstances. Having decided on the varieties to plant, make a plan of your entire place, and bear in mind that you want to so plan as to have all rows as long as possible, so as to avoid frequent turnings with horse and cultivators. With only ten acres from which to support a family from the start, I should plant my trees and vines on the square plan, rather than the triangular or quincunx, so as to better utilize the space between the trees, as I shall hereafter show.

These preliminaries arranged, plow deeply with four horses, using a subsoiler behind the turning-plow to loosen, but not raise, the lower soil, and harrow till all is as smooth as can be made. This must be done when the soil is in just the proper condition from rains or irrigation. The whole ten acres should be so leveled that you can get irrigating water on all parts of it with little labor. Lay off a half-acre near your barn, put a good bank around it, and sow twenty pounds of clean alfalfa-seed on it, and thoroughly cover it with a light harrow. This may seem to be a good deal of seed for half an acre, but you can't afford to sow less, as you are situated.

If walnuts are adapted to your place, plant a row of soft-shells on all sides of your ranch, thirty-five feet apart, as near the edge as you desire having a fruiting tree. Or they may be used for a roadway tree, although I prefer the pepper-tree for a windbreak. If the walnut is not adapted to your locality, the fig will be, and may be substituted for the nut-tree, putting them only twenty-five or thirty feet apart. Plant the White Adriatic or Brown Smyrna. In one corner of your ranch also put one or two acres of walnuts or figs, putting the nut-trees forty feet apart, and the fig-trees thirty feet. As the alfalfa will be a little slow in getting a start, it will be best the first year to sow the spaces between the nut and fig trees to barley, so you will have some early feed for the horse and cow. One good horse is ample after your ground is first fitted to plant, and the team for this labor had better be hired. Now plant the remainder of your land to two or three varieties of fruit-trees, or fruit-trees and one kind of vines. The apricot, fig, peach, petite prune (Bartlett, Clap's Favorite, and Winter Nellis pears), orange, lemon, and Muscat grape will ever be in good demand; and with these to select from, almost any ten acres in the valley may be made to yield a handsome income—say a thousand dollars a year

net, after coming into full bearing—and this is much more than the farms of the United States average.

But, while these trees and vines are coming into full bearing, the family must in some way be clothed and fed. To do this successfully, put the ground between the rows of trees into the highest state of cultivation, and plant sweet-corn, potatoes, peas, beans, cabbages, cauliflowers, tomatoes, melons, peanuts, etc. With proper care it will not be long before you will have abundance to eat and sell. I am aware that there are those who earnestly protest against growing anything between the trees, if the trees are to be kept in their best condition. But I think it will be found, on close examination, that these protesters are closely related to that class of people who move their barns when their manure-piles get so big around the doors that it is difficult getting over them. There are thousands of acres in the vicinity of New York and other old cities that have had every foot of ground occupied by growing plants for the past hundred years, and this ground is more productive to-day than ever before. Take as heavy and as frequent crops as you choose from any land, attending to a proper rotation of crops, and at the same time give it the proper cultivation, and return to the soil a little more plant-food than you take out in crops, and your land will increase in fertility, and your trees will do better in every way than by the usual treatment of those who object to planting between the trees. Of course, care must be taken to plant nothing that will obstruct the light and heat of the sun. To illustrate: When I began, after putting out one and one half acre to grape-cuttings, I planted peanuts between the rows, and in the fall I sold the crop of peanuts for over ninety dollars. But I got an extra yield and an extra price. But if you cut it down one half it still makes a good investment. When these vines were two years old they yielded four tons of grapes per acre the first crop, and four tons the second crop, and the second crop was largely suitable for raisins. The three-year-old vines, last year, yielded over six tons per acre the first crop, and I know of no more promising vineyard in the valley to-day. When, in after years, these vines show lack of plant-food, I shall give them a dressing of bone-dust.

Between my rows of trees I planted all of the before-mentioned vegetables, and it was not long before our table was well supplied, and there was plenty of corn-fodder and beets for the cow and

horse. The acre of barley was also ready to cut in May, after which I wet the ground thoroughly, plowed it, and planted it to corn, which produced a large crop in corn and fodder. After the winter rains had thoroughly wet this ground, I again plowed it, and planted walnut-trees forty feet apart, and sowed barley. The second winter I planted pear and prune trees between the nut-trees, and potatoes between these; and last winter I put raspberries and blackberries between the trees on this acre.

To return to the first year. By June the alfalfa was ready to cut, and was cut three times more during the year. The second year I cut it eight times, irrigating after each cutting. Besides the milk, cream, and butter used in the family from one cow, we sold seventy-five dollars worth of butter the first year. The sales from peanuts, potatoes, butter, eggs, peas, beans, tomatoes, and other vegetables, amounted to several hundred dollars, while the cash outlay for subsistence for the same time was only sixty-six dollars and six cents; being largely for meat, flour, sugar, and fresh fruit for canning. The only fruit we had the first year of our own raising was blackberries. But after that our place yielded us berries, peaches, grapes, guavas, oranges, and dwarf pears. But if you raise your own potatoes, Irish and sweet, early and late, peas, cabbage, beans, tomatoes, squash, and minor vegetables, together with milk, cream, butter, and eggs, you need buy little in the line of provisions, excepting flour and sweetening, either sugar or honey, the latter being the more healthful.

This style of farming will necessitate constant watchfulness to see that all the ground is kept doing its best. See that crops are properly planted, cultivated, and harvested on time. Anticipate the markets as far as possible. Save everything that can be turned into manure, and when you take a load of produce to market, bring back a load of plant-food in the shape of manure. A good, properly-kept flock of hens will prove to be a constant source of income. Begin small, and gradually increase your flock as your knowledge of that industry increases. With the method of farming I have suggested you will have to keep your fowls confined, and buy all your feed for them, excepting green food in the shape of cabbages, beets, and alfalfa. But even then, with proper care, they will yield the largest profit on the investment of anything you have. Gradually contract your vegetable growing, and increase your small fruit-raising

between your trees, till at the end of ten years, if you have been temperate in all things, industrious, frugal, and joyful, you will doubtless find yourself surrounded by a small, but very healthy and happy family, with a net income of a thousand dollars a year on an average. Exceptional cases may quadruple that, and others fall beneath. But take an average estimate—my own place, for example:

100 ten-year-old and upward walnut-trees, 100 pounds per tree, at 6 cents a pound	$600
60 prune-trees, averaging $2 a tree	120
100 pear-trees, averaging $2 a tree	200
40 orange-trees, averaging $3 a tree	120
100 fig-trees, averaging $3 a tree	300
180 apricot-trees, averaging $1 a tree	180
1½ acre of grapes	150
Total	$1,670

I think there will be no question but that these estimates are low enough for an average. This leaves six hundred and seventy dollars for expenses; and I have also left out of the account the family supply of vegetables, the proceeds from the cow and poultry, and all of the fruit from the blackberries, raspberries, strawberries, guavas, two lemon-trees, twenty-five quince-trees, one olive, one almond, two pears, twenty-five peach, five plum, and twelve apple trees.

RAILWAY TABLES.

STATIONS ON THE SOUTHERN PACIFIC RAILWAY.

Distances are given from Los Angeles, with altitude of stations above sea-level.

STATION.	Miles	Altit'de
To Santa Barbara.		Feet.
Los Angeles	0	.....
San Fernando	21	.....
Newhall	30	.....
Camulos	46	.....
Fillmore	56	.....
Santa Paula	66	.....
Saticoy	73	.....
Ventura	83	.....
Carpenteria	100	.....
Santa Barbara	110	.....
To Yuma.		
Los Angeles	0	293
San Gabriel Mission	9	409
Savanna	12	296
Monte	13	286
Puente	20	323
Spadra	30	705
Pomona	33	857
Ontario	38	.....
Cucamonga	43	952
Colton*	58	965
San Gorgonio	78	2,560
Banning	87	2,317
Cabazon	93	1,779
Seven Palms	109	584
Indio	130	20
Salton	155	(†)
Volcano Springs	169	225
Flowing Well	179	5
Cactus	216	395
Yuma	249	140
To San Francisco.		
Los Angeles	0	293
Sepulveda	8	461
San Fernando	21	1,066

STATION.	Miles	Altit'de
To San Francisco.		Feet.
Tunnel	26	1,401
Newhall	30	1,265
Lang	43	1,681
South Side	50	2,350
Acton	55	2,670
Alpine	65	2,822
Lancaster	75	2,350
Mohave	100	2,751
Tehachapi (summit)	120	4,025
The Loop	130	3,500
Sumner	162	415
San Francisco	482	12
To Santa Monica.		
Los Angeles	0	293
Park Station (University)	3	.....
Santa Monica (seaside)	18	0
To San Pedro.		
Los Angeles	0	293
Florence	6	151
Compton	11	76
Dominguez	14	61
Long Beach (seaside)	21	.....
Wilmington (seaside)	22	.....
San Pedro (harbor)	25	.....
To Santa Ana.		
Los Angeles	0	293
Vinvale	10	.....
Downey	13	111
Norwalk	17	92
Anaheim	27	133
Orange	32	127
Santa Ana	34	134

* San Bernardino. † Below sea-level.

STATIONS ON THE CENTRAL CALIFORNIA RAILWAY.

STATION.	Miles.
To San Bernardino.	
Los Angeles	·0
Downey Avenue	1·6
Morgan	3·4
Sycamore Grove	4·2
Highland Park	4 6
Garvanzo	5·4
Lincoln Park	6·8
South Pasadena	7·6
Raymond	8·6
California Street	9·2
Pasadena	9·9
Olivewood	11·3
Fair Oaks	12·2
Lamanda Park (S. M. Villa).	13·4
Chapman	14·6
Santa Anita (Sierra Madre).	15·8
Arcadia	17·2
Monrovia	19·1
Duarte	21·2
Azusa	24·8
Glendora	27·3
San Dimas	31·4
Lordsburg	33·7
Palomares	35·1
Claremont	36·7
North Ontario (Magnolia)	40·8
North Cucamonga	44·8
Etiwanda	49·6
Rialto	56·7
San Bernardino	60·5
To San Diego.	
Los Angeles	·0
San Bernardino	60·5
Colton	64·0
Citrus	67·6
Box Springs	74·7
Perris	85·7
Elsinore	97·7

STATION.	Miles.
To San Diego.	
Wildomar	102·1
Murrietta	106·7
Temecula	112·5
Ranchita	120·0
Fallbrook	124·0
De Luz	130·5
Ysidora	139·0
Oceanside	143·7
Carlsbad	146·8
Stewart's	149·2
Encinitas	155·8
Del Mar	162·4
Cordero	164·0
Selwyn	171·0
Old Town	180·7
San Diego	184·2
Twenty-second Street	186·0
National City	189·2
To Barstow.	
Los Angeles	·0
San Bernardino	60·5
Irvington	68·3
Cajon	79·2
Summit	85·8
Hesperia	96·6
Victor	104·9
Oro Grande	110·2
Point of Rocks	112·4
Cottonwood	121·9
Barstow	133·5
To Rincon.	
Los Angeles	·0
Citrus	67·6
Riverside	70·9
Casa Blanca	74·9
Arlington	77·6
South Riverside	85·1
Rincon	89·0

Besides these stations the Central California Railway have nearly completed a road from Los Angeles, *via* Ballona Harbor, to Santa Monica. Another from Los Angeles, *via* Whittier, Santa Fé Springs, Ostrich Farm, Fullerton, Anaheim, Orange, Santa Ana, Tustin City, San Juan Mission, San Juan-by-the-Sea, to Oceanside; and another road from Riverside, *via* Santa Ana and Orange, to Los Angeles; and still another from Perris to San Jacinto. There is also a railway to Glendale, a road to the Ostrich Farm, and one to Cahuenga Pass. Each of these three roads is being extended beyond its present terminus.

RATES TO CALIFORNIA.

THE rate to California, at the time of writing (December 9, 1887) averages eighty dollars for first-class ticket from New York to Los Angeles or any other Pacific coast point. Some of the roads charge a dollar or two more, and some a trifle less. This rate is for a limited ticket. The purchaser is not allowed to stop over until he crosses the Missouri River, after which he is allowed a week extra time, thus giving him ample opportunity to visit Denver, Salt Lake City, Santa Fé, and other points of interest.

There is also an unlimited ticket, costing twenty dollars more, that allows the passenger to stop as he pleases between New York and the Pacific coast, but the limited gives all the time usually desired.

The railroads also sell round-trip tickets, first class, which are good for six months, for one hundred and twenty dollars. This makes the fare each way sixty dollars, and is the ticket usually purchased by tourists.

There is also what is known as the "mixed ticket," viz., second class, to the Missouri River, and, third class, from the Missouri River to the Pacific coast.

The purchaser of a mixed ticket must carry his own blankets. The cost of the mixed ticket is about sixty-two dollars. The traveler by this class saves all sleeping-car expenses, which by first class is about twenty dollars. This is not a bad way to travel, and persons of limited means will find it worthy of consideration. The

rates from Kansas City, Chicago, St. Louis, and New Orleans are from twenty to twenty-five dollars less than rates quoted from New York. The Pacific Mail Steamship Company sells tickets *via* the Isthmus of Panama for eighty dollars. This trip by water takes twenty-eight days.

Railway rates on roads in California are usually from three to four cents per mile.

THE END.

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